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The Oil Man's Calendar

JUNE	
3	Illinois-Indiana Petroleum Association, Robinson, Illinois.
15-16	Pennsylvania Grade Crude Oil Association, Pittsburgh, Pa.
July	
10-17	American Institute of Mining and Metallurgical Engineers Regional Meeting, San Francisco, Calif.
AUG.	
1- 6	The Eastern United States Michigan Oil & Gas Exposition. Mt. Pleasant, Michigan.
SEPT.	
4- 8	American Society of Mechanical Engineers, New York.
5	Oil Workers International Union, Hammond, Ind.
11-15	American Chemical Society, Boston, Mass.
13-15	National Petroleum Association, Atlantic City, N. J.
OCT.	
4 -6	American Institute of Mining & Metallurgical Engineers, Petroleum Division, Galveston, Texas.
9-10	American Gas Association Annual Convention, New York.
16-20	National Safety Congress, Atlantic City, N. J.
18-20	Independent Petroleum Association of America, Fort Worth, Texas.
19-20	American Institute of Mining & Metallugical Engineers, Petroleum Division, Los Angeles.
NOV.	
13-17	American Petroleum Institute, 20th Annual Meeting, Stevens Hotel, Chicago.
15-17	American Institute of Chemical Engineers, Providence, R. I.
DEC.	
4-7	American Society of Mechanical Engineers, Philadelphia.

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A GREAT NEW IMPROVEMENT IN ROTARY HOSE

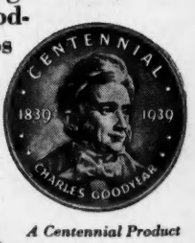
— built with flanged ends that eliminate troublesome shank couplings

LOOK at the construction of Goodyear's new Flanged Type Rotary Hose shown in the blueprint below and you'll be quick to see its advantages. Note how the tube extends through to the end of the flange, forming a smooth, flush, rubber-sealed joint with the adapter by which it is connected to the pump line. There is no shank at the coupling to obstruct the flow and set up eddy currents — mud flows through faster, smoother.

This means no more shutdowns to replace worn-out shanks because there is no metal *inside* the hose exposed to abrasive wear. Elimination of shanks also makes the hose more flexible at the ends, easier to handle.

Another important advantage is the greater quickness and ease of coupling and uncoupling. The high quality alloy steel flange is built in as an integral part of the hose; it cannot pull or work loose. Connection is simply a matter of bolting to the adapters — two or three minutes' work at most.

Carcass of this hose is the Goodyear time-proved wire-reenforced construction that has proved itself on the deepest, highest pressure jobs, now made still more efficient with the new flanged ends. The G.T.M.—Goodyear Technical Man — will be glad to show you this new time- and money-saver. To bring him to your rig, write Goodyear, Akron, Ohio, or Los Angeles, California—or phone the nearest Goodyear Mechanical Rubber Goods Distributor.



THE GREATEST NAME IN RUBBER

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This Week's Panorama

ALTHOUGH the oil industry's situation has been improved lately through a partial recovery of the gasoline market, the outlook remains clouded by various uncertainties.

Uncertainties Cloud Oil Outlook

Prominent among the uncertainties are those surrounding the general business situation, the regulation of crude oil production, and control of refinery operations.

Although the past week brought improvement of the prices of various commodities and a rise in the stock market, there has not yet occurred a definite upturn in business activity, following the gradual decline since late 1938.

The oil industry so far has not appreciably felt the lagging of general business activity, as consumption of petroleum products has been remarkably good. But unless business in general goes ahead, oil consumption will lag, and the oil industry will be affected adversely.

Control of crude oil production is fairly satisfactory under May allowables. But Illinois remains a problem. The state is producing a substantial amount of crude that can be marketed only at less than posted prices, and it almost certainly will continue to do so at least for several months.

Refinery runs of crude oil lately have been dangerously high, having risen to a new all time peak in the week ended May 20. So far, the markets have fairly well absorbed the large refinery output of gasoline and other products; and inventories have been kept within reasonable proportions, as demand has been unusually good. However, having geared its operations to the present high rates, the industry might have difficulty in adjusting refinery runs to market requirements if demand should take a less favorable turn.

Considerable Distress Oil in Illinois

Illinois presents the inconsistent price situation in which daily production is mounting, while distress crude oil is holding closer to the posted price than it was six months ago. Daily output is now around 215,000 barrels. But no crude oil is selling below 90 cents a barrel, other than that being delivered on contracts made during the winter.

Currently 45,000 barrels of daily production is selling below the $1.15 posted price. Not more than 10,000 barrels of this is selling lower than 90 cents a barrel. A few old contracts were for as low as 62 cents a barrel.

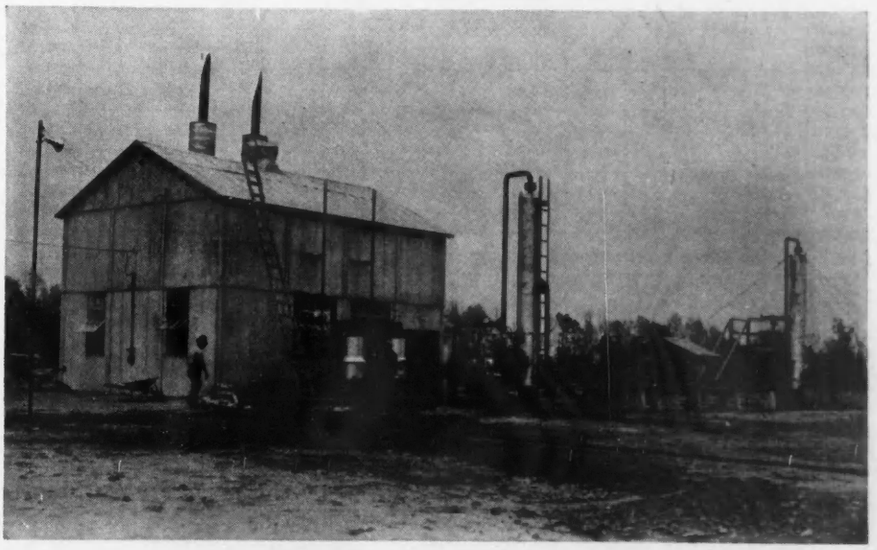
Salem is responsible for 40,000 barrels of this below-the-market oil. Loudon, the second field in output, has some oil moving at low prices, on contracts made during the winter.

The prospect is for Illinois daily production to reach 250,000 barrels daily in July. Salem alone will account for this increase of 35,000 barrels daily. Since it is now the source of substantially all oil selling below the market, indications are that the amount of oil available below the posted price will increase as output at Salem increases.

By mid-summer, however, the Illinois Basin will have additional outlet of 40,000 barrels daily through the pipe line now building by Socony-Vacuum Oil Company, Inc. Meanwhile, additional lines will be built to rail lines that traverse the Salem field.

The prospect is for below-the-market oil in Illinois

Recycling Plants Permit Recovery of Gasoline In Wet Gas Fields



GAS recycling plants, such as this one at Cotton Valley field, North Louisiana, are coming into extensive use, particularly in distillate or wet gas fields.

Gasoline is taken out of the wet gas, and to prevent waste and maintain the reservoir pressure, the stripped gas is forced back into the producing formation.

Over a dozen of these plants are in operation, principally in Texas and Louisiana.

to follow the course of production in Salem. Recently this field has had revival of drilling to the McClosky lime to add to its campaign to drill out the Bethel sand. Offset requirement drilling to both these formations should be completed within six months. Prior to the end of that time, the whole area will get additional pipe line outlet, part of which will be available to Salem.

It looks, therefore, like the Illinois Basin will have as much as 75,000 barrels daily of below-the-market oil for a few months, after which additional outlet plus decline in output will erase the necessity of selling oil at lower than postings.

Outside of Salem, only Loudon, currently producing 46,000 barrels daily, and Clay City, producing 18,000 barrels a day, have sufficient output to offer distress oil. Loudon is being drilled at a slow enough pace to prevent a sudden jump in output, and Clay City has the restriction of adequate pipe line outlet and declining production.

No other Illinois field has daily output as high as 10,000 barrels.

Record Crude Runs Darken Gasoline Picture

THE oil industry lately has been seriously jeopardizing the gasoline markets through exceptionally large refinery runs and gasoline production.

The latest weekly statistics, covering the week ended May 20, revealed that crude runs to stills had been stepped up sharply to the highest rate in the history of the industry.

The full effect of those heavy runs probably will not be reflected in figures on the production of gasoline until the week ending May 27, as some of the crude involved will not emerge in the finished form until then. The gasoline output at the plants showed a slight decrease in the week ended May 20.

The production of that week was promptly absorbed by the markets, as consumption continued comparatively brisk; and the industry was able to make another material withdrawal from gasoline storage.

The crude runs of 3,460,000 barrels daily in the week ended May 20 exceeded those of the previous week by 60,000 barrels a day, and were 5000 barrels daily above the previous all-time peak, which was reached in the week ended September 25, 1937. The runs in the week of May 20 were 7.3 percent higher than those in the corresponding week last year. In the week ended May 13, similarly, the runs had been about 7 percent larger than a year previously.

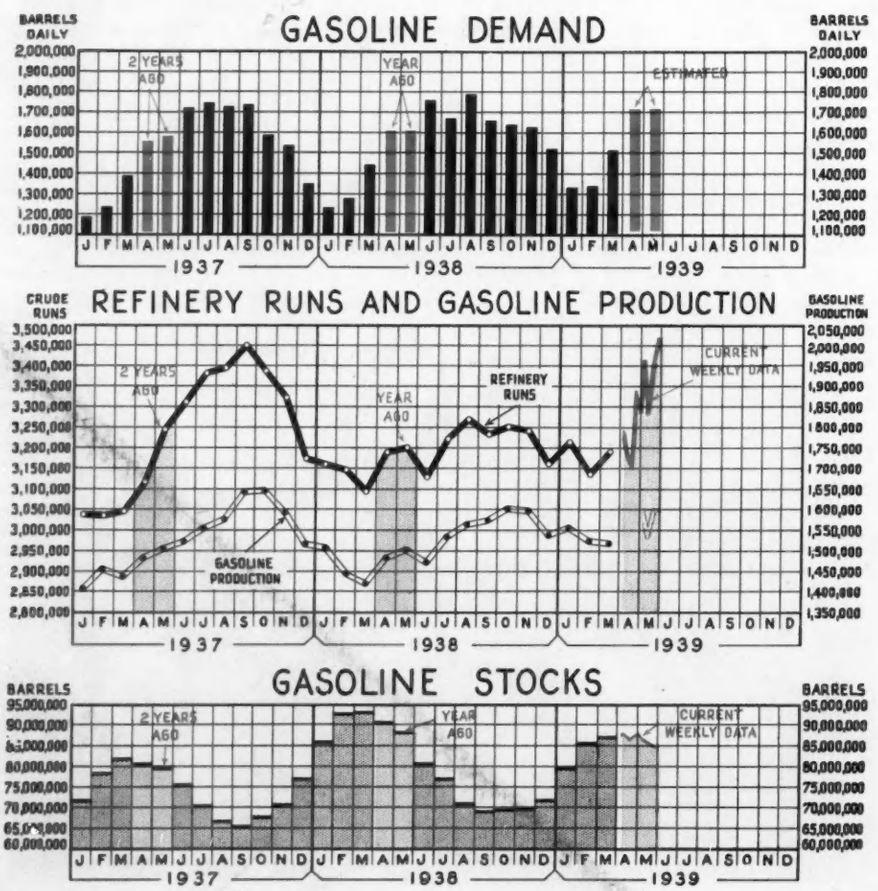
These recent refinery runs have been larger than circumstances have justified. Even if the runs a year ago had proved correct, a 7 percent increase currently over those runs would not be fully justified, as gasoline demand is up only around 5 or 6 percent, while a similar gain is shown for all petroleum products in the aggregate. But actually, the refinery runs at this time last year were considerably excessive, having resulted in persistently burdensome inventories of gasoline and other products. Therefore, last year's refinery runs may not be used as a pattern for this year's operations.

Gasoline production in the week ended May 20 totaled 11,139,000 barrels, equivalent to 1,591,000 barrels daily, as compared with 11,172,000 barrels, or 1,596,000 barrels daily in the previous week, a decrease of 5000 barrels daily.

Stocks of finished and unfinished gasoline in the United States were reduced 514,000 barrels in the week ended May 20, having been brought down to 84,294,000 barrels. That amount was 4.4 percent less than the 87,992,000-barrel supply held one year previously.

The present inventory of gasoline is clearly more moderate than that held a year ago, being smaller while demand is running higher. But economists are of the opinion that the present stocks embody several millions of barrels more than the industry actually needs for efficiently and adequately supplying the trade.

And exceptionally large refinery runs, such as those in the week ended May 20, may be expected to interfere with the normal gasoline storage reductions of the heavy consuming season.



Advance of Gasoline Market Improves Situation

By L. J. LOGAN, Associate Editor

THE oil industry has moved in recent months into a more satisfactory position, aided by remarkably good demand for gasoline and for most other petroleum products.

Particularly helpful has been the improvement of the gasoline market, which has occurred despite exceptionally large refinery runs and gasoline production, with brisk demand preventing seriously excessive inventories.

In the past two months, gasoline prices at the refineries have improved around ¼ cent a gallon. The prices are, however, about ¼ cent lower than a year ago, only about one half of the ground lost within the past year having been regained.

The retail markets have been slow to respond to the higher refinery prices, but important advances of dealer tank wagon and retail prices have been made in the past few weeks, including a general increase in the Middle Western marketing territory.

These advances indicated that the refinery prices were fairly firm at their improved levels, and that the whole gasoline price structure was reasonably well assured of a sound foundation on higher ground.

Better Prices Needed

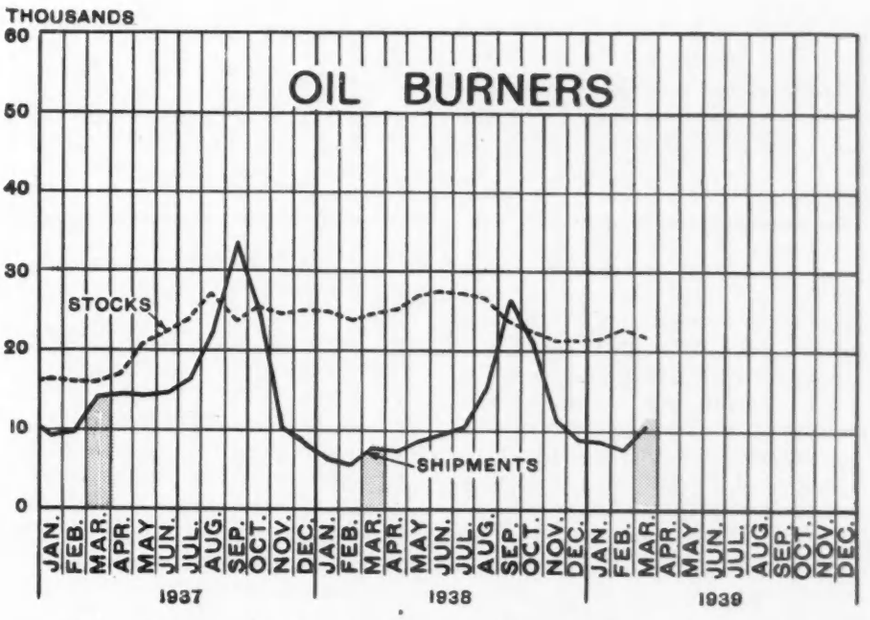
Better prices for refined products, particularly gasoline, have been sorely needed, as evidenced by the poor records of earnings made by the oil companies in the initial quarter of this year.

The earnings averaged around 60 percent less than in the first quarter of last year, due principally to unsatisfactory prices of gasoline and other products.

The refining division of the industry was particularly handicapped, as crude oil prices were not down proportionately with the product prices. Consequently, independent refining companies and large companies buying substantial proportions of their crude oil requirements were especially hard hit.

Through the recent improvement of the gasoline market, refiners have gained the opportunity to break even or to show some profit, whereas they previously could operate only at a loss.

However, still further improve-



Comparatively good sales of oil burners this year augur well for consumption of fuel oils. Shipments are failing to equal the high levels of 1937 but are running well above the levels of 1938.

Prevailing Trends of Oil Demand Are Indicated by Recent Bureau of Mines Forecasts

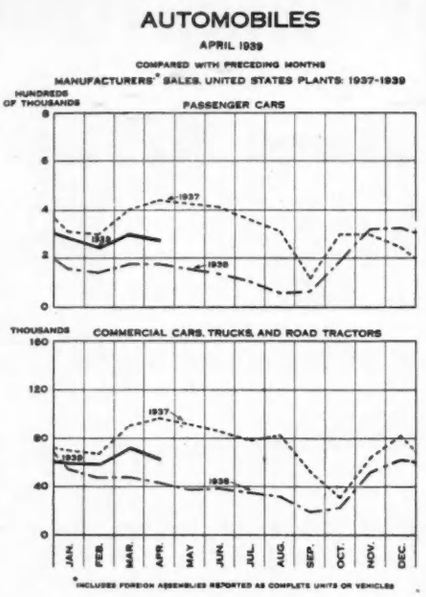
(Barrels)

MONTH	Total Demand for Domestic Crude	MOTOR FUEL DEMAND		
		Domestic	Export	Total
April, 1939:				
April, 1939, forecast	103,020,000	46,300,000	4,300,000	50,600,000
April, 1938, actual	103,732,000	43,254,000	4,474,000	47,728,000
Change from year ago	−0.7%	+7.1%	−3.7%	+6.0%
May:				
May, 1939, forecast	106,180,000	48,000,000	4,300,000	52,300,000
May, 1938, actual	106,290,000	44,911,000	4,576,000	49,487,000
Change from year ago	−0.1%	+6.9%	−6.0%	+5.7%
June:				
June, 1939, forecast	104,730,000	50,600,000	4,300,000	54,900,000
June, 1938, actual	100,351,000	48,293,000	4,284,000	52,577,000
Change from year ago	+4.3%	+4.7%	+0.4%	+4.4%

Automobile Sales Disappointing Lately

SALES of automobiles have proved somewhat disappointing lately, having dropped off in April, whereas they increased inn April, 1937, and held at March levels in April, 1938.

American manufacturers sold 337,372 motor vehicles in April, 1939, compared with 371,940 in March, 219,310 in April, 1938, and 536,150 in April, 1937.



ment of product prices is needed to restore satisfactory margins of profit on refinery operations.

Unless such additional improvement of product prices occurs, moreover, crude oil prices will be in danger of being pulled down, as asserted recently by the head of one of the integrated companies.

In view of the exceptionally large refinery runs lately, however, it is doubtful if the markets for petroleum products will be able to show important additional improvement or even to retain all the ground that has been gained.

Crude oil runs to stills broke all previous records in the week ended May 20, and the statistics of the industry for the week ending May 27 probably will reflect those heavy runs by showing sharply increased gasoline output at the refineries and a failure of gasoline stocks to show a normal seasonal decrease.

The industry certainly has been making all the gasoline for which there has been a firm demand.

Demand Less Promising

Although demand for petroleum products has been remarkably good so far this year, having run higher than last year, some slowing down of consumption is anticipated.

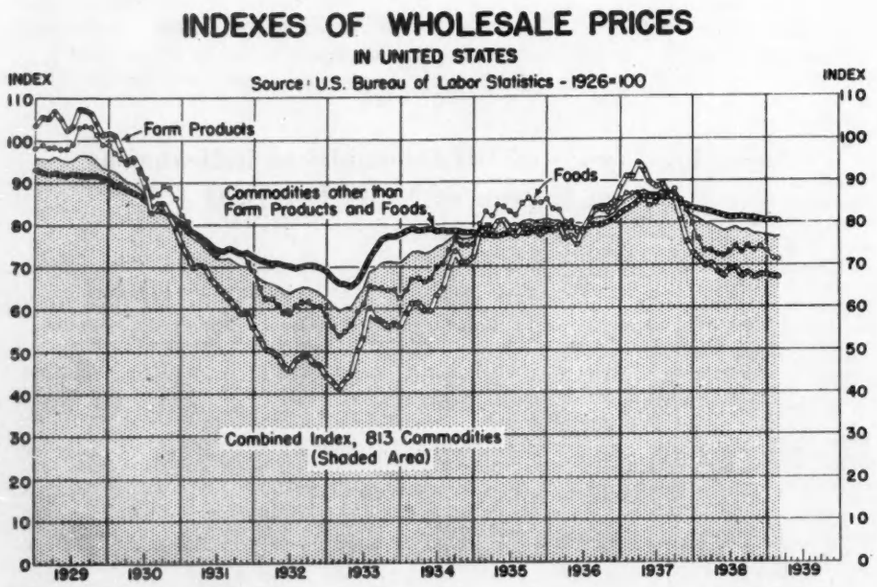
The Bureau of Mines has estimated that total gasoline demand in June will be 4.4 percent greater than in June of last year. In previous monthly forecasts, the bureau estimated gains over last year amounting to 5.7 percent for May and 6 percent for April.

The estimate of 4.4 percent larger total gasoline demand in June, 1939, than in June, 1938, was based on the expectation that exports would be about the same as last year and that domestic consumption would be up 4.7 percent.

That estimate of domestic requirements was more conservative than earlier forecasts, the bureau having anticipated gains of 6.9 percent over a year ago in May and 7.1 percent in April.

Oil Prices Follow General Commodity Price Trends

ALTHOUGH prices of crude oil and petroleum products depend materially on conditions in the industry, they undoubtedly are strongly influenced also by the powerful economic forces outside the industry, which affect all prices, as evidenced by the accompanying chart.


INDEXES OF WHOLESALE PRICES
IN UNITED STATES
Source: U.S. Bureau of Labor Statistics - 1926=100
INDEX
Farm Products
Foods
Commodities other than Farm Products and Foods
Combined Index, 813 Commodities (Shaded Area)
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939

The trend of oil prices has been quite similar to the trends followed by the prices of all commodities as a whole, farm products, and foods, all of which have been downward since early 1937.

Prices of crude oil and refined products reached their post-depression peaks in early 1937. Crude oil prices declined only a little in late 1937 and early 1938, but broke generally in the fall of 1938. But prices of gasoline and other refined products began declining in the fall of 1937, continued declining in 1938, and only in recent weeks have turned back upward.

Gasoline prices at the refineries have improved around 1/4 cent a gallon in the past two months, but are about 1/4 cent lower than at this time last year. However, retail prices of gasoline have improved only slightly, and are around 3/4 cent a gallon lower than a year ago.

FIGURE 1

Wildcat Drilling in 1938*

By FREDERIC H. LAHEE, Chief Geologist
Sun Oil Company

THIS paper reviews data on wildcat drilling for the fourth consecutive year[1]. In the first two articles (referring to the years 1935, 1936, and 1937), only the Gulf Coastal Plain states were covered. The third article ("Further Notes" . . . etc.), included most of the states in which drilling has been undertaken in search of oil, west of Ohio, Kentucky, and the Atlantic seaboard states. For purposes of comparison with these earlier articles, the present paper treats the subject, first, for the Gulf Coastal Plain states and then for the whole country, excluding Ohio and more eastern states from which information has not been received.

In compiling the data, we have tried as far as possible to adhere to the definition of a *wildcat* as a hole drilled completely outside the known boundaries of pools already developed, and far enough from producing areas to be essentially a test of new possibilities. Such a hole would usually be at least two or three miles from production; yet in some cases, notably in association with salt domes, a wildcat might be much closer to the edge of the known pool. The term would include all true discoveries of new pools, but not discoveries of new sands within old pools of which the structure and areal extent are known. However, the term *would* include holes finding new pay sands off the flanks of known producing structures and outside the limits of the known producing area, and also holes finding new pay sands on structures where very few producers had been completed. In spite of every effort to standardize this conception of a wildcat hole, different geologists have somewhat different ideas on the subject, so that final statistics cannot be mathematically exact; but we feel that the results are correct within a very small and inconsequential limit of error.

IN this paper statistics on wildcat drilling have been reviewed for the year 1938. Figures are given separately for the Gulf Coastal Plain states and for the whole United States, exclusive of a few eastern states from which data were not obtained. During 1938 the campaign of wildcat drilling continued with increased fervor. More holes and more footage were drilled, and more new pools were discovered. The question is raised as to what may be the outcome of this aggressive drilling for new reserves if it persists.

We are indebted to the American Association of Petroleum Geologists for permission to reprint this article, which is to appear in the Association's June bulletin and which was presented in part at the annual meeting of the Association in Oklahoma City last March.

On the map in Figure 1, numbers in parentheses indicate total footage drilled; figures preceding parentheses indicate the number of holes drilled; figures above the cross line are for producing wells, both oil and gas; and figures below the cross line are for dry holes. In this area (Figure 1), during 1938, a total of 5,651,664 feet was drilled in 1471 holes, divided as follows:

200 producers ..... 984,262 feet
1271 dry holes.....4,667,402 feet

This means that 13.6 percent of the holes drilled, and 17.4 percent of the footage drilled was successful.

In our earlier reports on wildcat

* The writer wishes to express his sincere gratitude to these gentlemen for their willing assistance in compiling and sending to him the abundant data used in preparing this paper: A. P. Allison, A. H. Bell, K. E. Born, A. E. Brainerd, G. E. Burton, G. V. Cohee, R. J. Cullen, G. F. Fix, G. C. Gester, E. W. Hard, C. T. Jones, E. A. Koester, C. S. Lavington, A. M. Lloyd, J. J. Maucini, G. B. Moody, D. J. Munroe, C. R. Nichols, R. E. Rettger, C. H. Row, T. C. Stauffer, E. B. Wilson.

TABLE 1

Comparative Statistics for Gulf Coastal Plain States, Omitting North Central Texas and Panhandle of Texas

	Producers Drilled				Dry Holes Drilled				Total Number Wildcats Drilled	Average Depth of Hole	Number of Dry-Hole Ft. Drilled for Each Producer, Foot
	Holes		Footage		Holes		Footage				
	No.	Percent	Feet	Percent	No.	Percent	Feet	Percent			
1935	78	7.32	354,834	9.7	987	92.68	3,415,296	90.3	1065	3540′	9.63
1936	116	10.67	527,286	12.8	971	89.33	3,585,676	87.2	1087	3783′	6.80
1937	138	12.1	765,690	15.7	1002	87.9	4,096,990	84.3	1140	4090′	5.35
1938	142	12.0	785,106	16.1	1036	88.0	4,083,029	83.9	1178	4132′	5.21

drilling in states of the Coastal Plain area[2], data were not available on North Central Texas and the Panhandle of Texas, and therefore these districts were omitted in the calculations. In order to permit fair comparison of this year's figures with those of 1935, 1936, and 1937, we are similarly omitting these two districts of Texas from the totals mentioned below in Table 1.

This table shows a steadily increasing percentage of producers and of footage drilled in producers, and also a decreasing footage drilled in dry holes for every producer foot. It also reveals a steady increase both in the number of wildcat wells drilled each year and in the average depth per hole.

To provide a basis for comparison for future years, we submit in Table 2 figures for the entire area shown in Figure 1 (i.e., including all of Texas):

Figure 2 exhibits the data on wildcat drilling for 1938 in most of the states of the United States where this kind of exploration is active. These data are listed in Table 3.

TABLE 2

Statistics for all Gulf Coastal Plain states shown in Figure 1, for 1938 only.

Producers drilled in 1938:		
Number of holes....	200	13.6%
Total footage	984,262	17.4%
Dry holes drilled in 1938:		
Number of holes....	1,271	86.4%
Total footage 4,667,402		82.6%
Total number of wildcats drilled in 1938...	1,471	
Average depth of hole	3,842 feet	
Number of dry-hole feet drilled for each producer foot	4.74	

Out of the total 2638 wildcat holes drilled, 369, or 13.98 percent, were successful; and of the 8,860,484 feet drilled, 1,526,557 feet, or 17.22 percent, were drilled in the producing wells. For every producer foot, 4.8 feet of dry hole were drilled. The average depth of all the wildcats, producing and dry, was 3358.7 feet. Except for the average depth of hole, these figures are very similar to those given above the Gulf Coastal Plain states.

Selection of the location for a wildcat well may be based on surface geology, subsurface geology, trend from known structural or stratigraphic conditions, or shallow exploratory drilling; or it may be based on some non-technical suggestion or requirement, such as "creekology," "hunch," promotion, lease obligation, reported showings of oil or gas in holes previously drilled, etc. In many instances the reason for the location cannot be ascertained.

In Table 4 we have listed the reasons for drilling the 1938 wildcats, using the best information that we could secure from men familiar with such statistics, each in his own state or district. According to these figures, 301 wildcats drilled on technical advice, were successful (oil or gas), and 1362 were dry; 44 holes drilled for various non-technical reasons were producers, and 535 were dry. In other words, 18.09 percent of the holes drilled on technical advice were successful, whereas only 8.22 percent of those drilled without technical advice found oil or gas. Locations based on technical recommendations were more than twice as successful as those drilled without such advice.

In the Gulf Coastal Plain states, included in Figure 1, 5 percent of the wildcats, located *without* technical advice, were producers, whereas 16.08 percent of the holes located on technical evidence were producers. The fact that

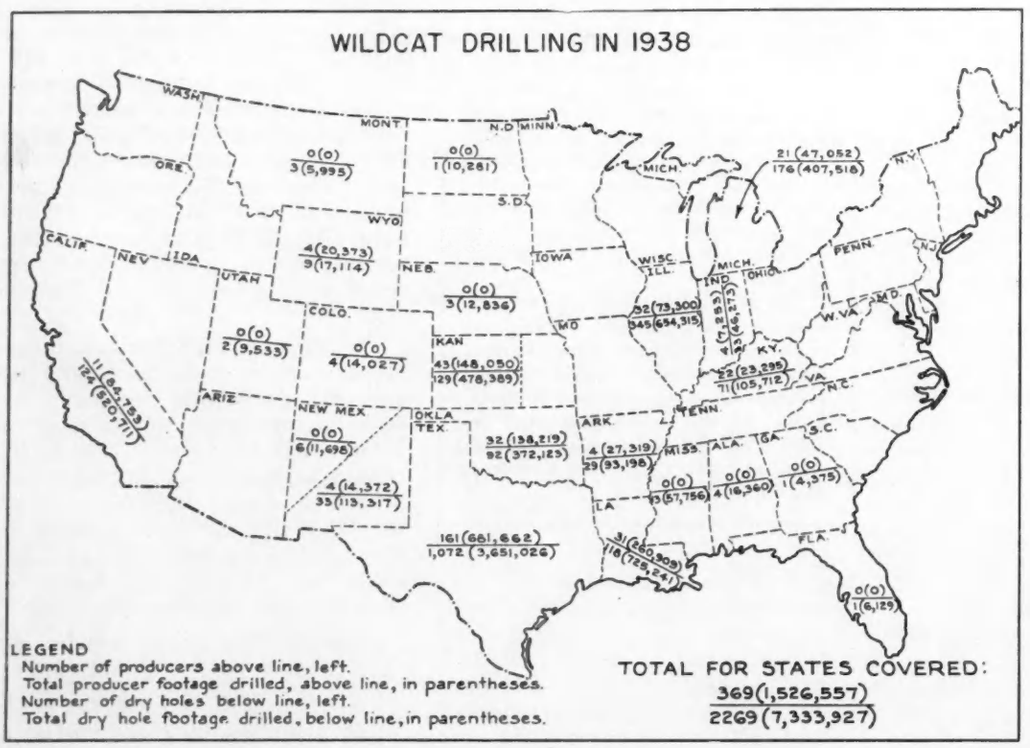


FIGURE 2

TABLE 3

Number of oil wells, gas wells, and dry holes drilled as wildcats in 1938

STATES	Oil		Gas		Dry		Total No. of Holes	Total Footage Drilled
	No. of Holes	Footage Drilled	No. of Holes	Footage Drilled	No. of Holes	Footage Drilled		
Alabama	..	.....	..	.....	4	16,360	4	16,360
South Arkansas	4	27,319	..	.....	29	93,198	33	120,517
California	10	77,045	1	7,708	124	520,711	135	605,464
Colorado	..	.....	..	.....	4	14,027	4	14,027
Florida	..	.....	..	.....	1	6,129	1	6,129
Georgia	..	.....	..	.....	1	4,375	1	4,375
Illinois	27	70,156	5	3,144	345	654,315	377	727,615
Indiana	2	5,629	2	1,624	33	46,273	37	53,526
W. Kansas	41	139,995	2	8,055	129	478,389	172	626,439
Kentucky	16	16,624	6	6,671	71	105,712	93	129,007
Louisiana	18	144,894	13	116,015	118	725,241	149	986,150
Michigan	21	47,052	..	.....	176	407,518	197	454,570
Mississippi	..	.....	..	.....	13	57,756	13	57,756
Montana	..	.....	..	.....	3	5,995	3	5,995
Nebraska	..	.....	..	.....	3	12,836	3	12,836
Nw. New Mexico	..	.....	..	.....	6	11,698	6	11,698
SE. New Mexico	3	10,386	1	3,986	33	113,317	37	127,689
North Dakota	..	.....	..	.....	1	10,281	1	10,281
Oklahoma	27	125,891	5	12,328	92	372,123	124	510,342
Texas	123	489,095	38	192,567	1072	3,651,026	1233	4,332,688
Utah	..	.....	..	.....	2	9,533	2	9,533
Wyoming	2	9,101	2	11,272	9	17,114	13	37,487
Total	294	1,163,187	75	363,370	2269	7,333,927	2638	8,860,484
Percent of Total	11.14	13.13	2.84	4.10	86.02	82.77	100.00	100.00

only from 16 to 18 percent of the wildcats drilled on technical advice found oil or gas is significant of the uncertainties of geology and of the consequent difficulties of interpretation of available technical data. The impressive thing is that the holes located on technical advice were from 2.2 to 3.2 times as successful as those drilled without such advice[3].

As a result of all this wildcat drilling, many new pools were discovered. Due to the fact that a new oil or gas well may eventually turn out to be an extension of an old pool, early classification of such new producers is not always correct, and records may vary. But whatever classification is used, there were more pools found in 1938 than in 1937, and in 1937 nearly half again as many pools were discovered as in 1936[4].

Wildcat drilling is largely the industry's response to recommendations made by geologists and geophysicists. We geologists are, therefore, particularly concerned with it, and rightly we view with pride the record of the last four years—(1) increasing proportion of producers to dry holes in total number of wildcats drilled; (2) reduction of number of feet drilled in dry holes for every foot drilled in producers, in spite of increasing average depth per hole; (3) increasing success in the discovery of new pools; and (4) maintenance of approximately the 3 to 1 factor of success in technical locations as contrasted with non-technical locations. These are fine accomplishments, but what do they mean and whither do they lead in the larger picture of oil exploration and development?

The three main incentives for wildcatting are the lure of pioneering, the urge to augment reserves, and the pressure caused by approaching termination of lease-hold interests. To what extent has each of these incentives controlled the campaign of wildcatting? To what extent will each, individually and relatively, control future wildcatting? What may be the effects of continued discovery of many new pools through a period of several years? These are important questions which may well be considered in relation to certain major problems of oil-field development.

References

[1] See "Wildcat Drilling in 1935 and 1936," Bull. Amer. Assoc. Petrol. Geol., Vol. 21, No. 8 August, 1937), pp. 1079-82; "Wildcat Drilling in 1937," Ibid., Vol. 22, No. 6 (June, 1938), pp. 645-648; "Further Data on Wildcat Drilling in 1937," Ibid., Vol. 22, No. 9 (Sept., 1938), pp. 1231-1235; "Corrections in Article on Wildcat Drilling" . . . . ,Ibid., Vol. 22, No. 9, (Sept., 1938), p. 1236.

[2] First two articles mentioned in footnote.

[3] After completion of this report, the following data were received from Tennessee:
80 holes drilled, 16 being oil wells and 5 being gas wells.
Total footage drilled, 63,385 feet.

[4] See The Oil Weekly, Vol. 92, Jan. 30, 1939, pp. 97-133.

TABLE 4

Basis for locating wildcats drilled in 1938

STATE	Geology		Geophysics		Geology and Geophysics		Sundry Non-technical		Unknown		Totals	
	Dry	Prod.	Dry	Prod.	Dry	Prod.	Dry	Prod.	Dry	Prod.	Dry	Prod.
Alabama	2	....	....	....	....	....	2	....	....	....	4	0
So. Arkansas	12	1	....	....	5	3	6	....	6	....	29	4
California	44	5	21	3	12	2	13	1	34	....	124	11
Colorado	2	....	1	....	....	....	1	....	....	....	4	0
Florida	....	....	....	....	1	....	....	....	....	....	1	0
Georgia	....	....	1	....	....	....	....	....	....	....	1	0
Illinois	21	9	10	4	16	9	97	3	201	7	345	32
Indiana	....	....	....	....	....	....	....	....	33	4	33	4
W. Kansas	34	17	6	6	1	2	88	18	....	....	129	43
Kentucky	42	13	2	....	1	1	1	1	25	7	71	22
Louisiana	31	13	44	17	1	....	25	1	17	....	118	31
Michigan	118	15	3	1	....	....	55	5	....	....	176	21
Mississippi	4	....	2	....	....	....	7	....	....	....	13	0
Montana	3	....	....	....	....	....	....	....	....	....	3	0
Nebraska	....	....	1	....	....	....	2	....	....	....	3	0
NW. New Mexico	1	....	....	....	....	....	5	....	....	....	6	0
SE. New Mexico	12	....	4	1	....	....	17	2	....	1	33	4
North Dakota	....	....	....	....	1	....	....	....	....	....	1	0
Oklahoma	30	13	23	12	....	....	33	7	6	....	92	32
Texas	677	104	134	34	30	12	181	6	50	5	1072	161
Utah	2	....	....	....	....	....	....	....	....	....	2	0
Wyoming	6	2	....	....	1	2	2	....	....	....	9	4
Totals	1041	192	252	78	69	31	535	44	372	24	2269	369

Problems of Pumping In Repressured Areas

Pumping Series

Article No. 7

Repressuring introduces many new and difficult pumping problems, some of which can be solved only by adjustments made in operating methods.

By JOHN W. CUSHING,
Foster & Davis, Inc.

OPERATORS of air or gas repressured leases have found many new and difficult pumping problems that were not encountered before secondary recovery methods were started. These problems vary according to different existing conditions such as the producing formation, type of oil produced, repressuring medium, pumping equipment, pumpers, and combinations of two or more of these. Some of these conditions cannot be changed and any problem which involves a non-changeable condition must be solved by adjustments of operating methods. The problems involving a changeable condition usually can be solved by the correct selection of equipment and/or men. The repressuring medium is the only one of these which might fall into either classification and there can be no doubt but that every operator would select gas as the repressuring medium if it were not necessary to consider economic angles as well as engineering factors.

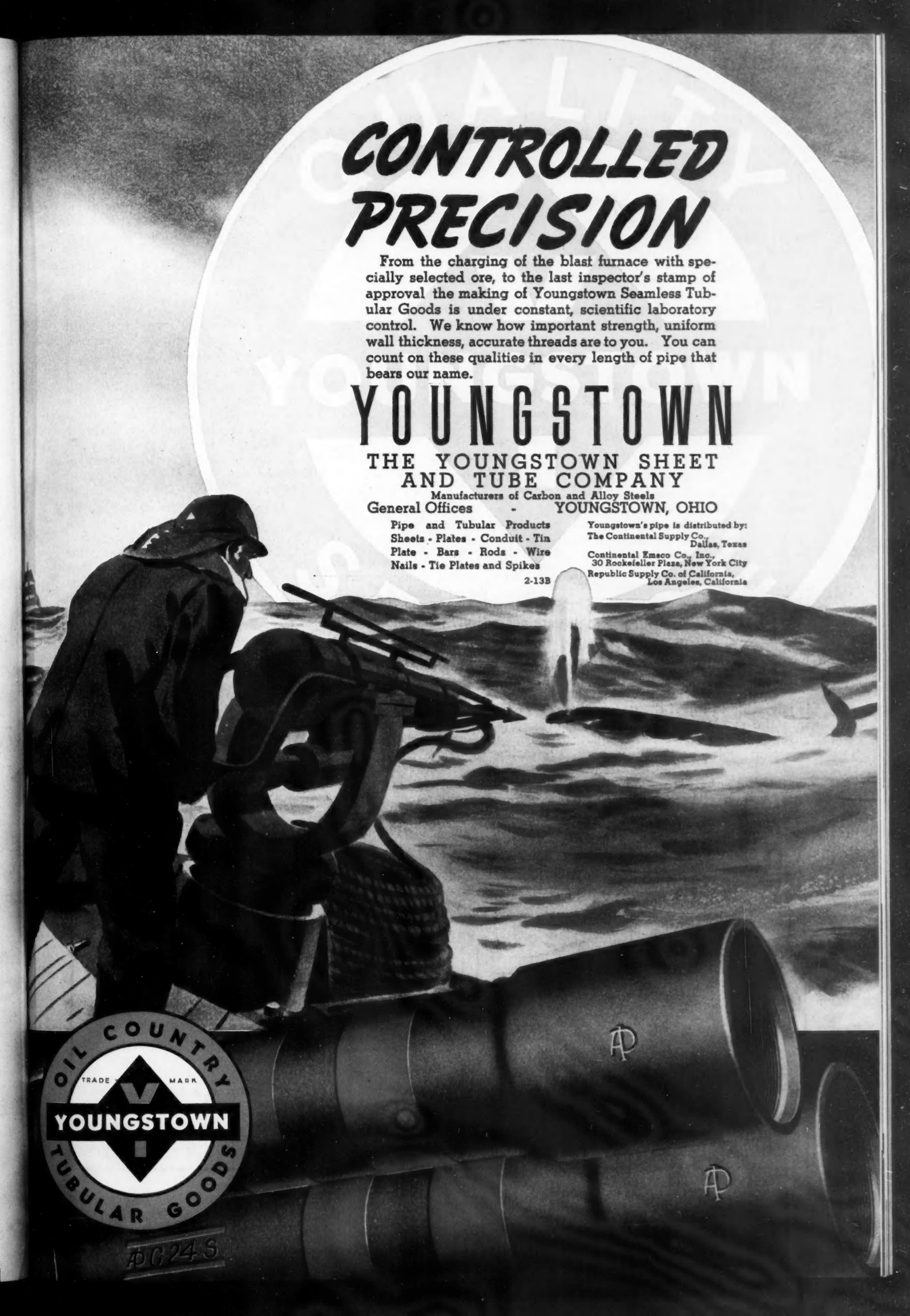
Pumpers

In a well conducted repressuring operation it is necessary to consider carefully the selection of the pumpers because part of the success or failure of the project will be due to them. It is important that they be alert, experienced men who pump by watching the wells rather than the clock. They should keep close watch on each oil well so that a report can be made to the foreman when any particular well is unduly influenced by injected gas or air. This is necessary so that progress of the repressuring action can be checked. In making daily rounds of wells the pumpers can watch all wells not in the gas or air system for any increase in open flow volume. This will aid in checking to prevent channeling. By seeing that all wells are shut down when pumped off there is less chance of having bad oil. Allowing wells to pump completely down creates an excessive pressure differential between the pay stratum and the pressure in the bottom of the hole, a condition conducive to channeling. Also, with a minimum of oil to lift, pump action may more readily emulsify the production, and if any water is present, it is likely to be increased in flow. This is especially important where air is used for injection.

Meters on the pressure lines should be watched so that any sudden increase in pressures or volumes may be stopped before serious damage results. Blowing the drips installed on the pressure lines is often part of the job of the repressuring pumper. If so, they should be kept drained so that water and gasoline will not get into the lines and cause frozen lines, rusted orifice plates, and false readings at meters or pressure wells.

Before any gas or air is injected each oil well in the area to be repressured should be given a thorough pumping test and its gas flow measured so that a gas/oil ratio can be established. After repressuring starts these tests should be made at regular intervals so that as the project progresses comparison can be made with previous tests. If the gas/oil ratio of any well becomes excessive as compared to other wells and to previous tests, something should be done at once to reduce the gas or air flow. Such suddenly increased ratio above normal is the first indication of channeling, and this action must be countered as quickly as possible.

Back pressuring to reduce gas flow is usually effective. This can be done by raising the tubing to increase the fluid pressure against the sand face or by back pressuring at the casinghead with a regulator or relief valve. Sometimes both methods are necessary. Some experimenting will probably be necessary to determine how much the tubing should be raised, or how much back pressure should be held at the casinghead to insure good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pumping results. Reducing the input volume and pressure of the pressure well responsible for the increased gas/air flow will usually aid in reducing the gas/oil ratio but this may cause a decline in production in nearby oil wells. Where any one of several pressure wells might be the cause of the excessive flow the one at fault can be found by shutting off each well for several days. When the right well is shut off the excessive flow through the sand will stop in a short time.

In some cases operators have filled the tubing of a pressure well with oil and then turned the presure back on the well. This is done so that the pressure would drive the oil into the more open sand or channel and partly close it. This method takes time and causes a decline in production because it prevents the gas or air from reaching the sand while driving the oil from the hole. Such a plan should only be tried if other methods fail. A tubing full of water can be used in the same manner.

Because of proration or a shortage of gas, some experiments have been made with part time repressuring. That is, repressuring for perhaps 12 hours and then shutting down for 12 hours. This might be an aid in retarding excessive gas or air flow from an oil well.

When repressuring is started it is advisable to inject the gas or air into the sand at the lowest pressure which will give an adequate injection volume. Starting pressures which are too high may cause channeling. Regulators and orifice flanges with connections for manometers at each pressure well will provide pressure control and information as to pressures and volumes which may help to prevent channeling. Despite all precautions, it is sometimes difficult to reduce excessive flow and some wells have had to be abandoned because of it.

Vapor Lock

Vapor lock is a common and troublesome problem found on many repressured leases. This is especially true where it is necessary to back pressure the producing wells.

When gas is injected into the sand the gas which is not absorbed by the oil moves along with the oil to a producing well. If this free gas is of such quantity that it cannot escape readily through the gas system then some of it will be drawn into the working barrel and cause a vapor lock. Back pressuring causes a restricted gas flow which in turn may cause a vapor lock. Most of the difficult cases occur where it is necessary to carry high back pressures.

Gas anchors of various types are in use and have proven satisfactory in many cases. Some operators have found that vapor lock trouble is lessened considerably if the wells are not entirely pumped off at each pumping. It is better to back pressure and remedy the vapor lock trouble than to stop back pressuring to stop the vapor lock.

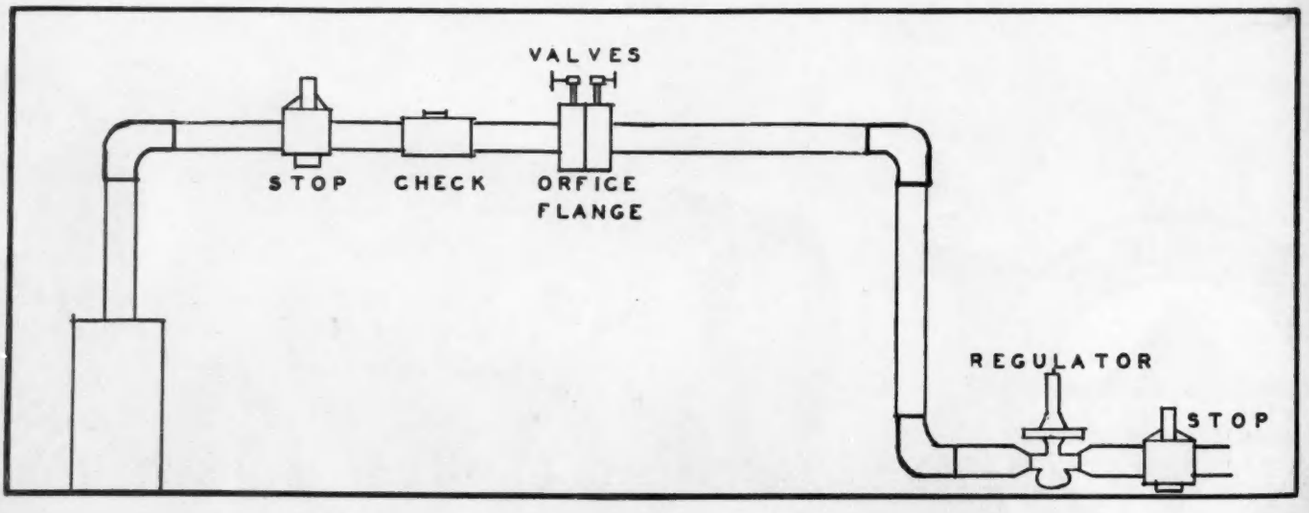
Corrosion and Bad Oil

The use of air creates more pumping problems than does the use of gas in repressuring. The corrosive action of the air on the sub-surface pumping equipment causes more frequent well pulling and replacement of pump parts which in turn causes an increase in operating expenses. Supply houses and manufacturers should be consulted as to the type of materials best suited to overcome the corrosive action. Reducing the air flow from the oil wells to the minimum amount necessary for good production will help to combat corrosion.

Bad oil, which the pipe line companies refuse to run because of its high B. S. content, is a common difficulty on air repressured leases. This is especially true during cold weather. If the input volume of the pressure wells is too large it may cause the wells to produce oil which the pipe line gauger will refuse to run. Some operators have found that part of the bad oil trouble can be eliminated by lowering the input volume until the right amount is found for the most oil production with the least amount of bad oil.

In some repressuring projects it has been found that a pocket drilled below the producing sand has been helpful in reducing the amount of oil turned down by pipe line companies. This pocket lets the oil accumulate below the sand and thus escape any cutting action the air might have upon it after reaching the hole. However, drilling old wells deeper increases the cost considerably and it cannot be done where there is water in the lower part of the sand or immediately below it. Some bad oil may be the result of poorly arranged rod lines. Where two wells are pumping on rod lines, one pumping one hour and one pumping three hours, a knock-off should be provided for the short time well. The continued pumping of the short time well after it has pumped off will cause it to produce oil below pipe line standard. Each well

Pressure well hook-up for measuring and regulating pressure and volume.



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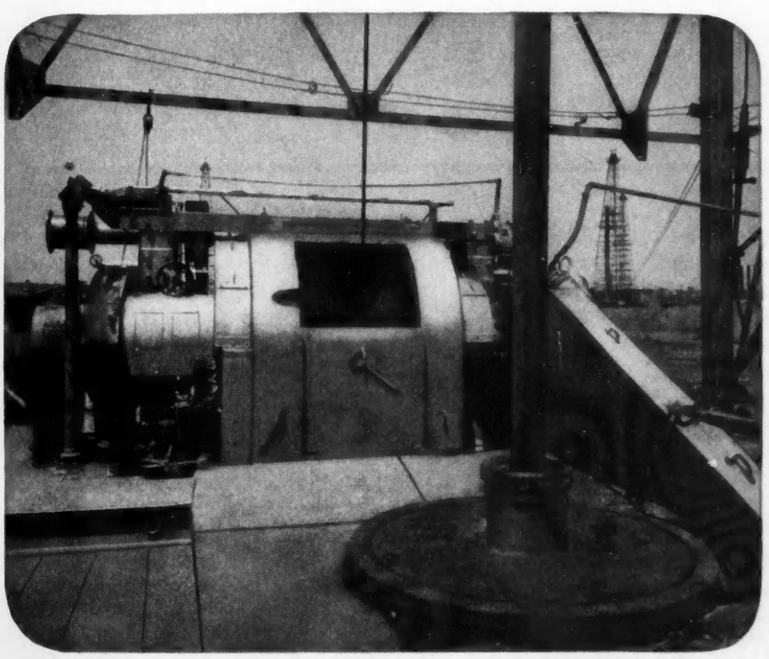

Ideco Big Giant draw works for drilling to as deep as 15,000 feet, with cast and forged parts of Nickel alloy steels. The International Derrick and Equipment Co., Beaumont, Texas, reports a number of these rigs have drilled more than 50,000 feet of hole without a single replacement.

Punching a hole down 15,000 feet, driving a rotary chain 1,500 feet per minute, pumping a column of oil up a mile or more, these tough production jobs call for tougher Nickel alloy steels.

Pictured here are three oil field applications of steels made more resistant to wear, steels safeguarded against breakage, by the added strength and ductility imparted through adding Nickel.

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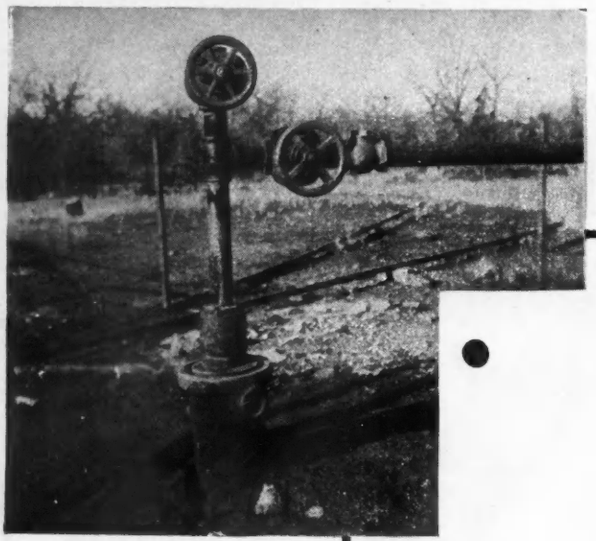
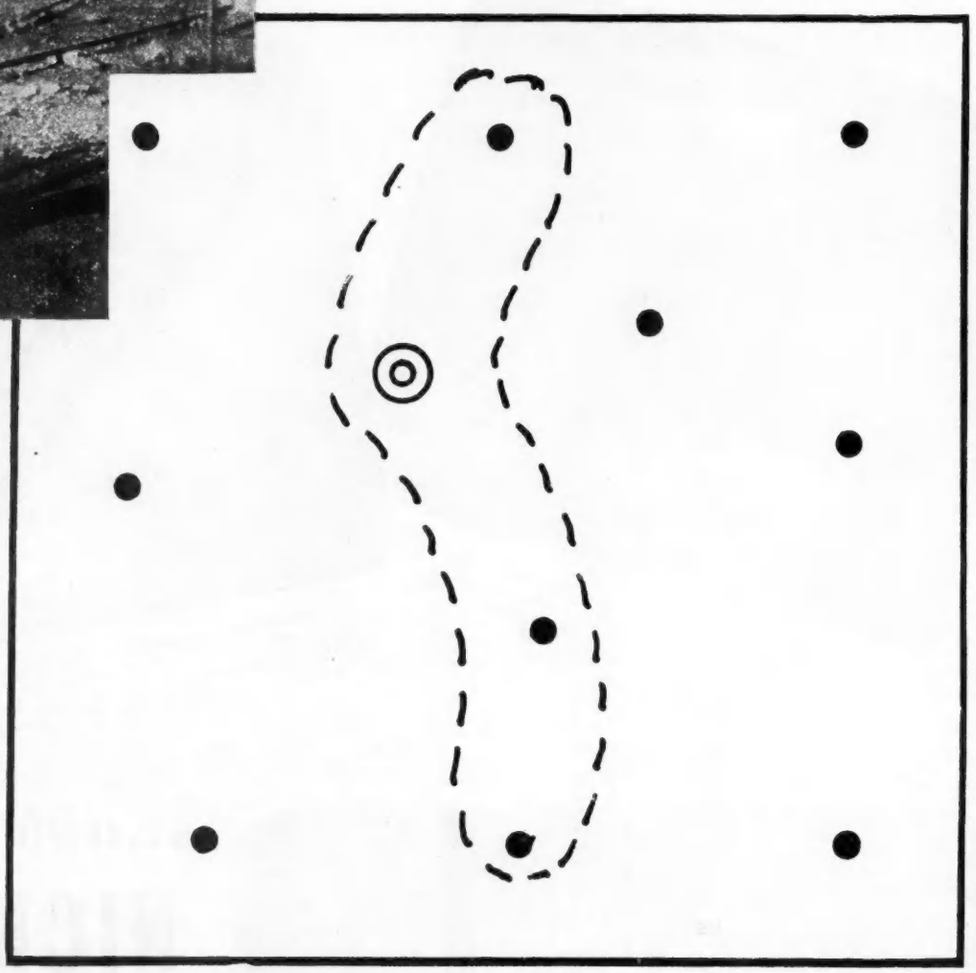


The above gas injection well is so equipped, with control valve downstream, that it can be closed in or bled down through the riser, also valve controlled.

Channeling of air or gas in repressured areas should be prevented. The accompanying diagram shows an instance of channeling, the result of which was that only the area within the outlined region was influenced by pressure injected in the double circled well.



should be fixed so that it can be shut down as soon as it is finished pumping.

Selection of a Pump

The selection of a pump for use on the majority of repressured leases is seldom a task initial to the start of the project. Most developments of this nature have been productive in the past, and are already equipped with adequate pumping equipment. For economic reasons it is generally desirable to continue the use of installations already on the lease, at least until the desirability of a change is indicated by operating conditions.

Should a change be necessary, equipment can then be installed which will meet the particular requirements of the individual wells. This new material must be economical as to purchase price and wearing qualities. Since most projects depend on many wells, each producing a small volume, rather than on a few wells producing large volumes, the need is for simple pumping equipment which will not be too expensive to purchase or operate.

Next Week: Pumping Conditions in Illinois.

Fuel Supply

Where gas is used for injection and a large supply is available, a safe and sufficient fuel supply is not a problem. But in most fields, repressuring has been delayed until the gas from the producing sand has been nearly exhausted and usually is no more than sufficient for running the power and possibly a vacuum or repressuring plant. This means that very little gas, if any, will be available for injection purposes and that some quantity of air will have to be used. As the repressuring continues the air content of the gas will become higher and the danger of using it for fuel becomes greater. This gas should be analyzed regularly so that an explosive mixture can be avoided. If this gas is used in lease houses care should be taken about leaving fires burning at night as the flame may go out leaving the gas to escape in the house. A fuel supply obtained from a different source than the oil sand is very convenient and should be sought. On many leases arrangements can be made to purchase fuel gas at a price which is not prohibitive. Either of these arrangements will assure a safe and dependable fuel supply and will avoid the danger of an explosion.

Care and Maintenance of Seismic Exploration Instruments

By EMRY C. STUEDLE

WHILE much has been written and spoken concerning the interpretation of geophysical exploration data obtained by means of the reflection seismograph, comparatively little has been published concerning the care and maintenance of the instruments used for the purpose of making the actual records. Obviously, before interpretation work can be done, acceptable records must first be secured; perhaps less obvious is the fact that the quality and even the quantity of such records depends not only upon correct original instrument design and upon the intelligence and diligence of those charged with field operations, but also in a considerable measure upon the manner in which the instruments are cared for in actual field work.

There are several phases of instrument upkeep. First, the normal care which is or should be given instruments by the field personnel in their daily work; second, additional care which may be supplied by specially trained personnel detailed for this purpose; third, methods by which obsolescence and run down condition of instruments may be minimized; fourth, factors of design which affect maintenance; and lastly, general benefits derivable from a systematic maintenance program.

Field conditions affect the problem. A party working upon the prairie may not have nearly the same difficulty in protecting its instruments from damage that is the natural lot of a party working the swamps and bayous. In the latter case, the intrusion of moisture and salt, and moving and frequent reinstallation of the entire equipment in boats, trucks, wagons and the like—and even out on the ground—is a constant hazard both to the mechanical and electrical components. The instruments are subjected to far more handling than when permanently installed. On the other hand, the prairie party may be working under a top-speed production schedule which leaves the field crew little time for caring for instruments beyond the usual routine which is essential in order to continue to operate at all.

Routine Care

The routine care of instruments involves primarily a clear understanding of, and attendance to, the mechanical welfare of the various components. It is hardly possible within the space of this article to cover the subject completely, but an attempt will be made to summarize the high points. First, comes cleanliness, or the nearest to this that conditions will permit. A regular going over of exposed surfaces with cleaning solutions, brushes and cloths, will prevent accumulation of dust, grime, salt deposits, photographic chemicals, and other destructive coatings. Where wiring is exposed, it is often one of the most vulnerable parts of the entire system, and must be inspected frequently. All moving parts of the oscillograph should be kept working freely, with the right kind and amount of lubrication applied to such parts as the camera motor, paper rollers and magazine parts.

The mechanical adjustments of geophones will depend upon the design. In nearly all geophones it will be found that a certain influence is exerted by the springs and their clamping. In general, those with thin springs are likely to be sensitive to differences in the springs themselves, so that bent or distorted springs must be guarded against. In balanced types the state of magnetic equilibrium may have a marked effect upon record character. Seismometers designed with thick springs are more likely to be sensitive to clamping variations, due to the inherent mechanical difficulty of perfectly clamping the end of a stiff spring against minute movement. In lining up a set of geophones the best criterion is a weathering shot, after preliminary adjustment by the method of kicking upon the ground some distance from the group of geophones. A set of geophones properly lined up and

uniformly planted in a close group will show remarkably close duplication of recording when tested with an actual dynamite shot. Unless some attention is given to spring adjustment it is possible to have various kinds of "character" on the several traces of the record from this cause.

Beside uniform springing, damping is of nearly equal importance. The problem of getting correct oil for damping in a given range of ambient temperature is not difficult, and many companies using oil damping operate with few changes the year round, perhaps utilizing three grades of oil. Observers capable of handling modern complex seismographs are usually able to judge which oil to use according to the season. The main requirement seems to be to have sufficient damping so that "free-wheeling" or record slurring does not originate from this source. If the sensitivity is decreased from slight overdamping it may be made up in the amplifiers if they are designed with enough reserve gain. However, the effects of underdamping may mask springing variations.

Most geophones have magnetic parts and these are prone to attract fragments of iron filings or chips. These particles may be removed by strong air pressure as from a garage air hose, or by exploration in the magnetic gaps with a long thin piece of steel which has itself been well magnetized. (A long thin magnet develops greater magnetic flux at its poles and so will attract the iron particles to itself.) Mud or salt water should not be allowed to accumulate in geophone cases and when these have entered they must be removed and new oil substituted, of the same kind and grade. Where oil is used for damping it is best to use a brand which can be widely obtained and which has by actual test data a minimum temperature coefficient of viscosity.

Regarding the camera, often neglected under pressure of production of records is the matter of photography. Modern oscillographs are designed to produce brilliant black-on-white photography when they have been set up properly. If the diffusion of stray light, light leakage into the paper magazine, optical angles, strength of lenses, shielding of light housings and choice of light source, have all been given due consideration by the designer and instrument makers, and bright clean mirrors have been attached to each galvanometer coil, the camera will have bright photography. If in addition the timing lines are well focussed, lie straight across the record, and are of the correct intensity relative to the galvanometer traces, they will generally stay that way for awhile.

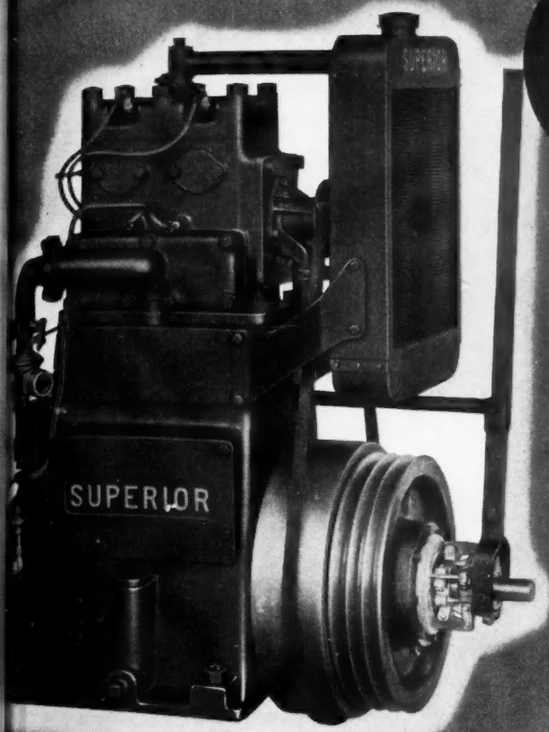
However, light bulbs wear down, the glass blackens as they grow old, and occasionally they burn out and must be replaced hurriedly in the field. Alignment of filaments in new bulbs may vary slightly. Galvanometer mirrors gradually accumulate a surface film which slightly attenuates and disperses the reflected light. Unless perfect light sources and clean lens and mirror surfaces are maintained, the photography suffers. For a time the deterioration is masked by the fact that a little more development of the bromide paper usually will bring out a weak trace. As time goes on and these conditions become worse, more and more development is needed, until finally the background of the records is dark gray instead of nearly white and time lines and seismic traces are fogged by overdevelopment. By this time it is usually a considerable task to eliminate all the causes of poor photography in this particular camera. The worst mirrors may be cleaned or replaced, or a new light bulb is put in, and the camera still gives much poorer photographic results than it is capable of producing. Therefore, it should be a part of daily routine to check up on actual condition of the optical system, since repairing one galvanometer trace for example, does not take long, but complete reconditioning of the oscillograph will occupy a skilled instrument mechanic many hours, even in the laboratory with all its conveniences for the work. It is an unfortunate fact that the better the camera is originally, the more run down it may become before its photography becomes excessively bad. However, with a little attention a basically good camera may be kept at all times in first class operating condition.

Other units inside the truck, such as seismic amplifiers, telephone equipment and loud speaking systems, storage and dry batteries by which the instruments are powered, amplifier plate supply motor-generators when they are used, expander or automatic amplitude control apparatus, control panels and tuning forks, all require a certain amount of looking after. Within the scope of this article it is not possible to detail all particulars. It may be sufficient to say that when the entire equipment is kept reasonably clean, both inside and outside, and when all parts are kept firmly mounted in their respective places, the chances are favorable that the routine mechanical services have been properly performed.

Instrument trucks are often subjected to being kept in cold garages and even out of doors occasionally at night. The instruments are made mostly of metal and on winter mornings they warm up rather slowly. Even in a dry climate it follows that when the interior of the truck is warmed, the instruments sweat moisture by condensation. Particularly is this detrimental where there has been exposure to salt atmosphere, for moisure which condenses and runs down inside electrical equipment such as amplifiers can carry salt into places where salt has no business to be. Beside causing corrosion to the metal parts, the insulation of vital portions of the amplifier circuits may be impaired, with resulting electrical troubles. Since it is necessary to heat developing chemicals from time to time on cold days, and to warm the truck for the observer's comfort, this process goes on continually in winter. Its bad effects may be minimized by keeping the interior of the truck warm at night. One of the easiest ways to do this is to leave a lamp bulb burning on a safe extension cord inside the recording truck. A moderate sized bulb will give off enough heat to maintain the interior of a closed truck at normal operating temperature. In some modern marine radio designs suitable drying resistors are being incorporated into the equipment for the same purpose, and the idea might well be applied to seismic instruments. It is advantageous to have the truck wired with a regular 115-volt circuit having receptacles where soldering irons, portable lamps, AC operated test equipment, and so on, may be easily plugged in. Current to the truck is furnished by a drop cord connected to any light circuit, and the servicing of instruments is greatly facilitated.

On the subject of electrical maintenance, it must be recognized that a reflection seismograph is really a collection of eight, twelve, or sometimes even more, separate seismic systems, each of which must record its story on the moving paper in the oscillograph. Each channel has

Superior ENGINES



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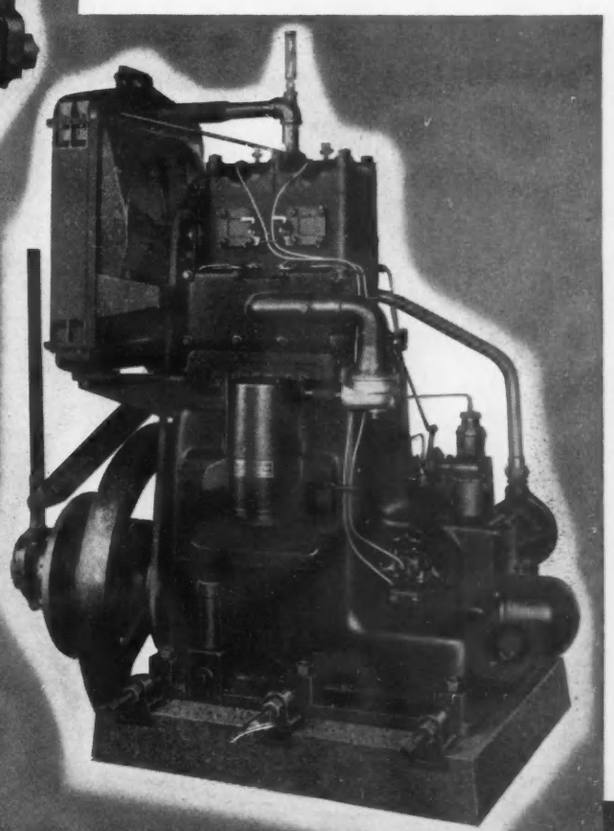

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an amplifier containing several stages of electron tube amplification. Three or four vacuum tubes are most often used per channel. Automatic or semi-automatic amplitude control units, which regulate the amplifier gain during the taking of a record, usually contain several vacuum tube circuits. Tuning forks are now usually driven by vacuum tubes, and there may be a loud speaking system connected with the telephone circuit. So it becomes apparent that the 12 element seismograph for example, may contain between 50 and 60 vacuum tube circuits for amplification and control. It is a triumph of modern engineering that vacuum tubes work so reliably and that their rather complex circuit apparatus gives so little trouble when properly designed and protected. The usual field crew is equipped with test instruments; a multi-purpose meter which may be used as an ohmmeter of various ranges to measure resistance, as an AC-DC voltmeter, milliammeter, and as a condenser tester, is almost essential in routine field work. A tube tester is of some value, although in this country tubes may be tested at any radio store, and sufficient good spares are carried to take care of ordinary cases of tube failure.

For checking the electrical cables to geophones, it is now customary with some companies to build in an ohmmeter with a special kind of switch to quickly cut in on each geophone circuit and test it before making the first shot of a new set-up. By merely turning a switch knob the connections to each geophone can be checked from inside the truck in a few seconds, saving time and dead traces. The mechanical condition of cables and connecting plugs outside the truck closely parallels their electrical condition, and any temporary splices or repairs made in the field should be placed in good order before the next day of field work. Permanent splices should be soldered at a single point where the wires twist together, for solder stiffens the wire and a long soldered joint easily breaks again. Permanent splices are wrapped with para rubber splicing tape, then usually with friction tape, and may be shellacked.

Instruments Improve

The extent to which seismic instruments have been developed during the past few years is indicated to some degree by Figures 1, 2 and 3, which are block diagrams representing the approximate layout of three typical exploration seismographs. Figure 1 is the old refraction seismograph which did noble duty on the Gulf Coast in discovering and extending salt dome fields. The assembly in the upper portion of the figure was duplicated in each of three recording trucks, and each observer usually looked after his own instruments. There was plenty of time between loading of the thousand-pound shots to do minor repair work in the field.

Figure 2 represents the six ele-

Figure 1
Refraction Seismograph
1925-1930

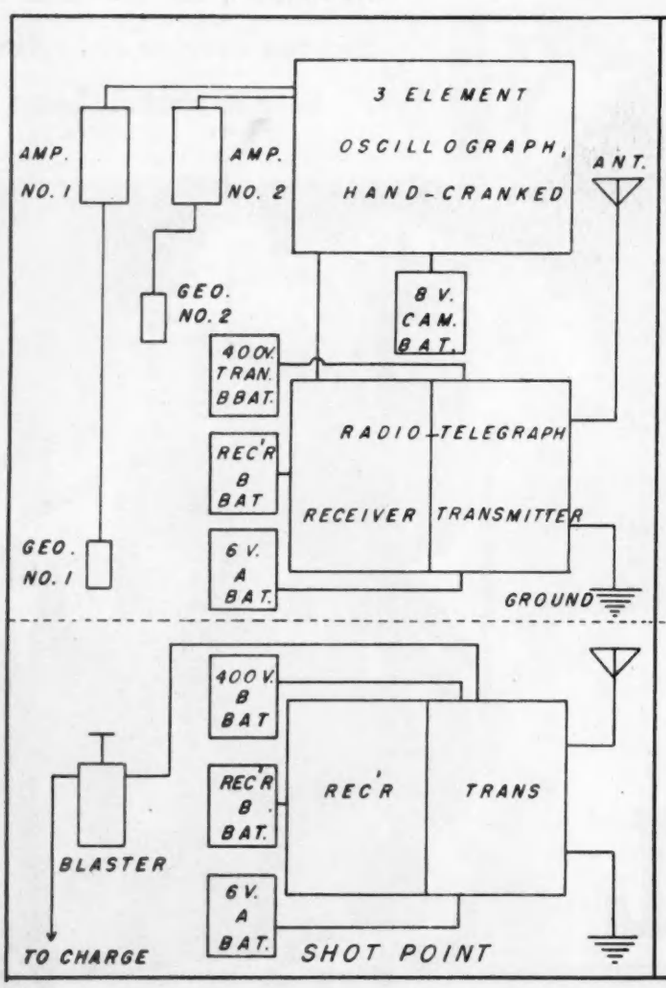
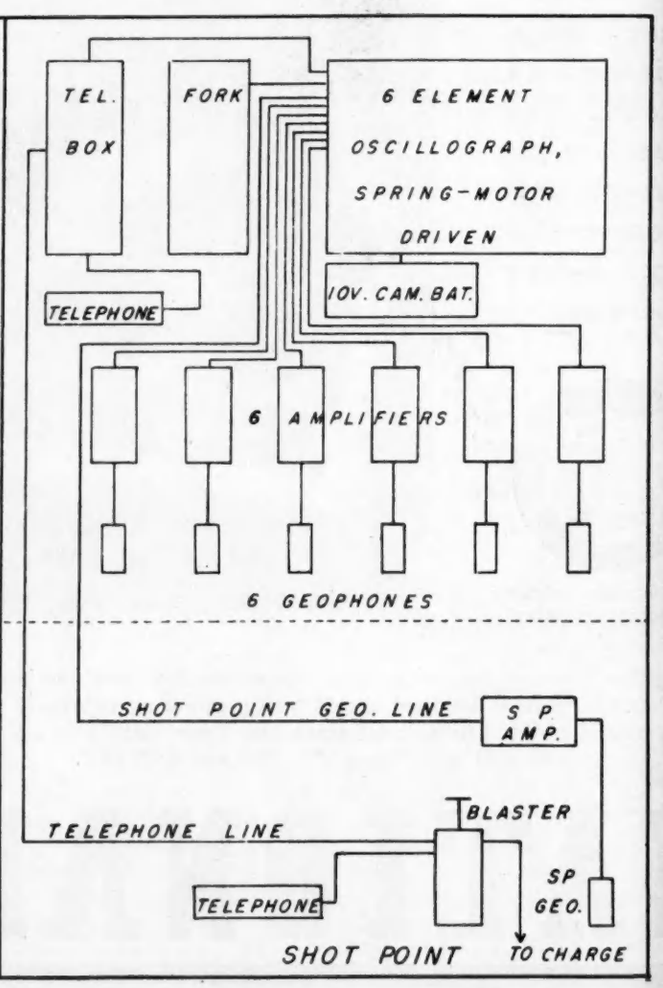


Figure 2
Reflection Seismograph
1932



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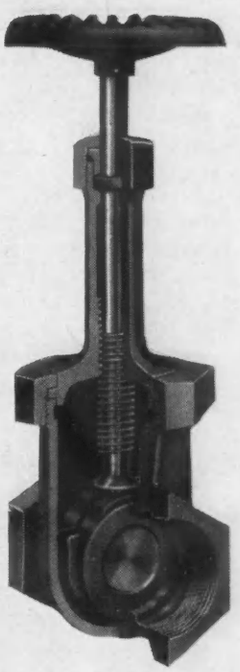

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ment reflection seismographs used extensively in the Mid-Continent areas for several years.

Figure 3 is a 12 element job which was developed particularly for California dip shooting. Seismographs of eight elements are widely used now, as well as 12 and sometimes more for special purposes. Most of the more highly developed instruments embody some form of automatic amplitude control which may not necessarily be arranged as shown in Figure 3. However, the purpose of these diagrams is to point out increasing complexity of design as instruments are developed to get more information per shot.

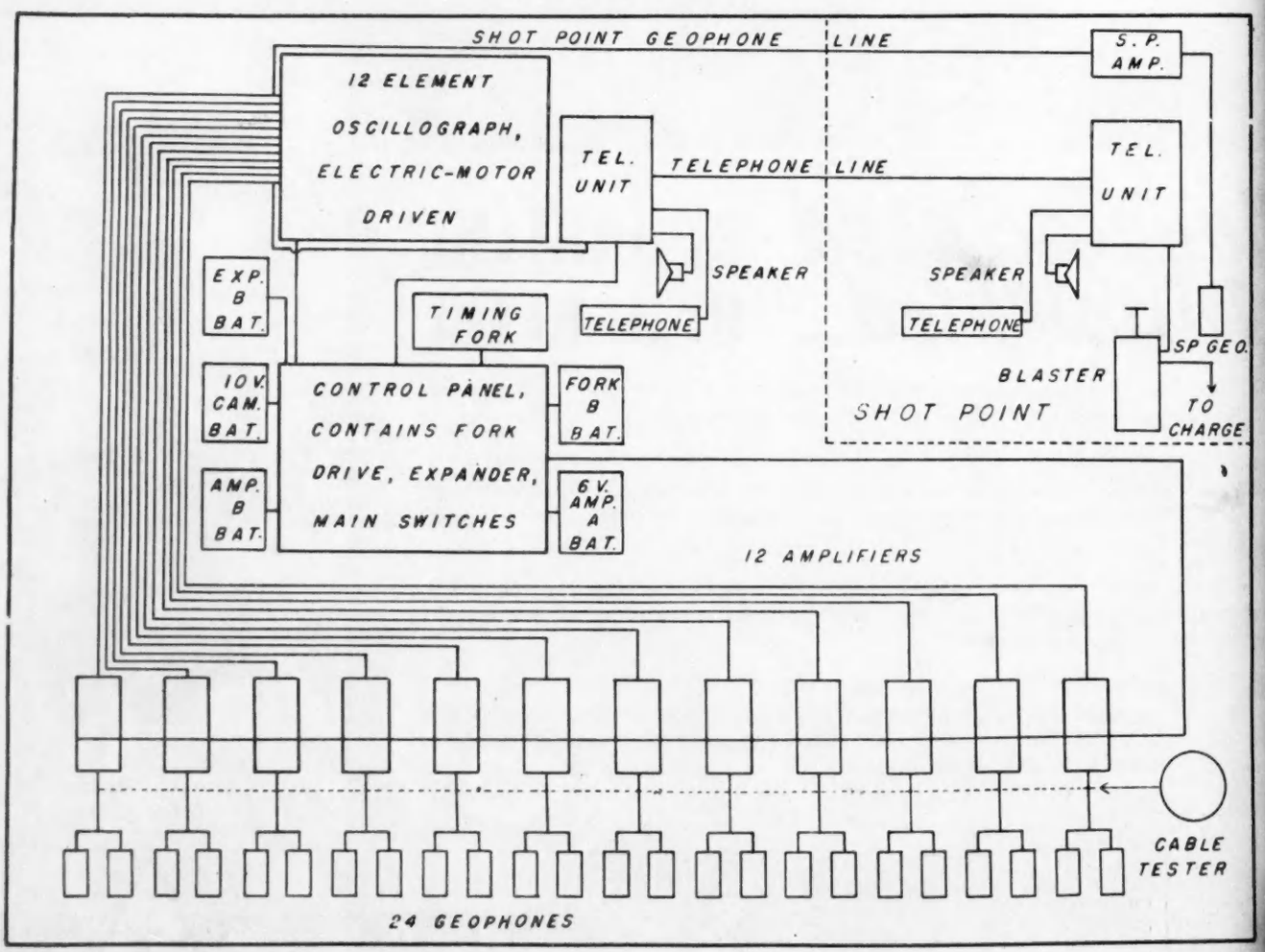
The result of this development is that seismographs will do more than formerly, but they also have many more parts in their construction. Design is now mainly a problem of balancing the desirability of doing the many things which can be done wtih instruments, against the factors of increase in weight, bulk, circuit complexity and increased problems of maintenance.

Maintenance Plan

It is primarily the function of the field crew to complete the largest number of properly shot profiles which the party is capable of recording per working day. To help keep instruments operating in excellent condition at all times, a systematic program of inspection and maintenance has proven of value in some of the more alert organizations. Advantages of a definite plan of this kind will be enumerated later in the article. The following is a brief description of how the maintenance plan is carried out.

The man doing this work may be known as the supervisor of instruments and as such he is in general charge of all the instrumental equipment of the company. He travels from party to party and makes routine inspections about once each month, at which time he goes over the instruments with the observer and confers with him as to anything whatsoever which may have a bearing upon the operating condition of the instruments. Some supplies are carried, as well as a full kit of tools and suitable testing equipment. He assists with emergency repairs and takes orders for new supplies for the party, the supply orders being given to the shipping department at the laboratory. His own orders are in writing from one of the executives of the company who is in final charge of technical matters and who understands instrument problems. His written reports are made back to this executive who is thus kept informed of field needs and instrument conditions with certainty and a minimum of lost time. These reports include routine tests, special repair work done or needed, supplies on hand and ordered, etc. A set of forms is arranged covering the usual subjects of inspection, such as battery condition, lineup of geophones, results of tests of tuning fork or other timing device

Figure 3
Twelve-Element Reflection Seismograph, introduced 1936.



NEW LABORATORY EQUIPMENT DUPLICATING PRODUCTION CONDITIONS IN THE HOLE, GIVES

Visual Proof

OF THE SUCCESS OF STRAIGHT AQUAGEL-WATER MUD FOR DRILL-ING-IN, IN LOW-PRESSURE AREAS

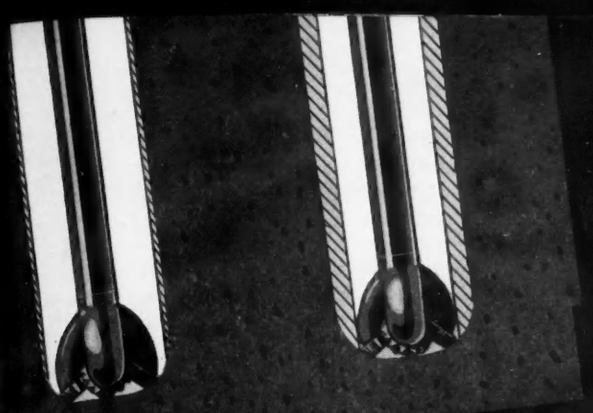
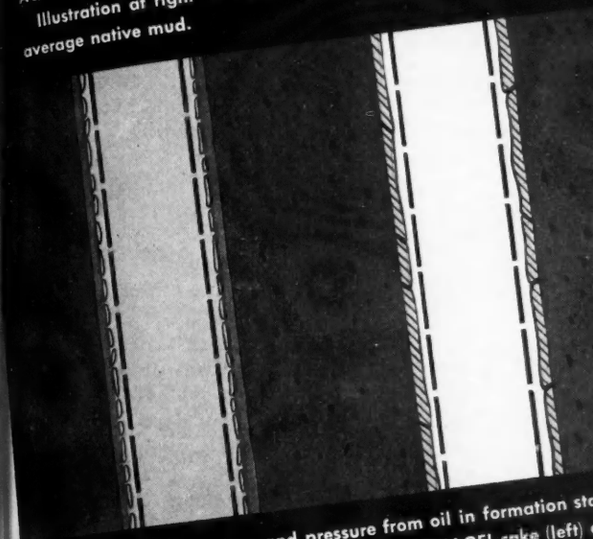
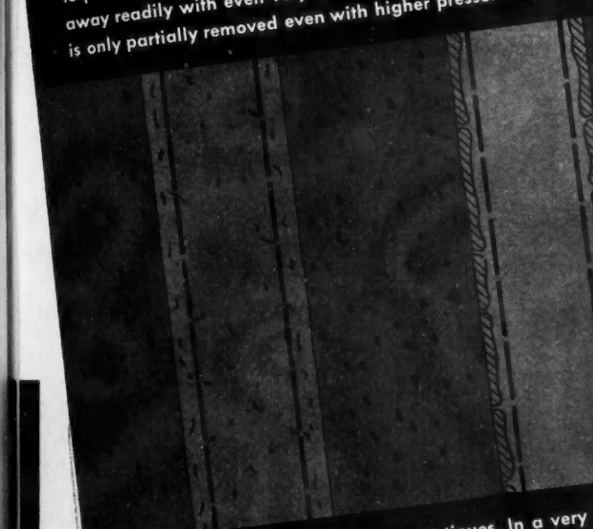


Illustration at left shows thin mud cake deposited by straight AQUAGEL-water mud as bit drills into oil sands.
Illustration at right shows thick mud cake deposited by an average native mud.



Liner shown set in place and pressure from oil in formation starting to push mud cake off walls of hole. Thin AQUAGEL cake (left) comes away readily with even very low pressure. • Native clay cake (right) is only partially removed even with higher pressure.



Condition depicted as production continues. In a very short time, oil from the formation dehydrates the AQUAGEL cake (left), causing it to shrink and curl and be quickly carried away through the slots in the liner. Oil removes only a small part of the water and does not disintegrate the native clay cake, which therefore impedes the passage of the oil. Liner openings often become plugged so that only a fraction of the oil bearing horizon is open to production. Oil actually hardens many native clay cakes.

In this series of tests, filter cakes from AQUAGEL-water muds and from native clay muds, were deposited on similar cores at a pressure of 500 pounds per square inch. The AQUAGEL mud deposited a cake with a thickness of 2/16", the native clay a cake of 7/16". Heads containing either slots or perforations similar to those contained in liners were placed over the mud cakes, and back pressure, using kerosene as a medium, was applied through the cores.

Before the back pressure reached 50 pounds, the AQUAGEL-water cakes began to dehydrate, broke away from the cores, and started to pass through the liner openings. The native clay cakes remained in place behind the slotted or screened openings even though the pressure was increased to 200 pounds per square inch.

Tests of the cores used in the foregoing experiments disclosed that their permeability was greatly reduced in cases in which native muds had been used compared to those in which AQUAGEL had been used.

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against the standard time source carried as part of the supervisor's field equipment, etc.

His qualifications must include a wide knowledge of the design and construction of seismic instruments. He must be a competent observer himself, as well as a laboratory engineer. Needless to say, he must be a skilled mechanic and be properly equipped with good tools and test equipment which is suited to the work. Emphatically he should not be a mere "trouble shooter" although his duties include being available to all parties for emergency repair work. His routine inspection of equipment is intended to prevent emergencies from arising, due to any preventable instrument cause. One of his duties is to inspect new equipment before it leaves the laboratory and as it goes into service in the field; the same applies to overhaul jobs.

In all cases he must look at field problems from the field crews' point of view and adapt laboratory facilities to the needs of the field. He is given not only the responsibility for the correct maintenance of equipment, but also sufficient executive authority to enable him to carry out indicated activities. He must exercise a certain amount of judgment in knowing when to make repairs or changes in the field and when to recommend laboratory overhauls.

By analysis of each case of breakdown or difficulty he may greatly reduce the causes of instrument trouble. By judicious exchanging and replacing of parts of the equipment he may keep all crews in top operating condition, even when they are hundreds of miles from the main laboratory and the instruments have been in use in the field for a considerable time. He is informed of latest instrumental developments and their results, and at the proper time sees to it that real improvements which have been developed are incorporated into each set of instruments. Usually this is done during overhauling, the instrument truck being gone over at the laboratory about every ten months or so, or at such time as it is convenient to call in the party for a day or two. By following this practice it is certain that both the run down condition and obsolescent state of design which would otherwise occur in time, will be postponed or almost entirely eliminated. The amount of obsolescence which is preventable by intelligent action of field maintenance personnel is alone enough to justify this activity, and to call forth the best effort on the part on the company to see that it is well carried out.

Design affects instrument maintenance. There is a vast difference between instruments which have been designed with the idea of accessibility, and those which have been merely put together so that each part can be made to work but is not particularly easy to get at when some adjustment is required. Accessibility in the laboratory and accessibility inside a recording truck are two different things, moreover. Almost any kind of apparatus can be worked on in a warm, well-lighted laboratory, spread out on a bench. It is a far different matter to work on some equipment in the field in cold weather when hands are numb. Therefore, designers and builders of instruments can exert a considerable influence for better or worse on the matter of maintenance, both as to care offered by the observer, helpers, and instrument supervisor in the field, and as to further maintenance work done at times by the laboratory force.

Installation of instruments in trucks should be arranged for the convenience of the observer, for mechanical strength, so as to not add too much weight, and if possible so as to remove the storage batteries to another compartment. Developing pots should be arranged with good lids for least spilling of liquids while moving, the developing box containing the pots of developer, short-stop, hypo and rinse water being placed near the rear of the truck and away from amplifiers. A drain hole should be made in the bottom of the developing box to carry off spilled chemicals. The vulnerability of wiring has been mentioned. It is best placed in conduit for permanent installations and no bare shielded wire should ever be used, nor should a shield braid ever be used for a conductor under any circumstances. Where shielding is required it should be of the rubber sheathed type and grounded at only one end. Sufficient slack must be left at the ends of wiring so that leads will not be broken if a unit is pulled out for inspection. Wiring should be done according to a written set of specifications which name the kind of wire and how it is to be used. Only in this way can trucks be wired uniformly and so that the wiring will give no trouble. The formulation of wiring specifications is properly a duty of the field supervisor of instruments. The matter of wiring is often not given nearly the amount of consideration which it should have. In one company which had fairly good instruments at the time, it was found that half or two thirds of all the so-called instrument trouble could be traced to wrong kinds of wire and wrong methods of using it. Simple, definite specifications were drawn up and wiring troubles almost ceased to exist.

Advantages

To sum up the advantages of a systematic program of instrument inspection and maintenance, one might first mention that the field men are quick to appreciate the fact that the company is thus sharing the responsibility of any unusual working conditions which would otherwise tend to put an undue burden upon certain parties which have to operate in difficult areas. Then, too, the frequent contact with the laboratory and home office helps exchange views on field and laboratory problems, brings forth ideas making for better field technique, uncovers need for further research and improvements in the laboratory, and checks the actual results of these in the field. Seismic parties equipped with newly built apparatus are assured that they may begin work with instruments which have been inspected and properly installed in good order; the observer taking over used equipment is not penalized by negligence of the former operator, and perhaps most important of all, trouble with instruments is prevented before it actually happens in far more cases than when maintenance is done on a hit-or-miss, "fix it when it breaks down" basis.

It follows that when instruments and field practice are standardized to the best of everyone's ability and lost time due to instrument causes is almost entirely prevented, the party is free to operate in the best interests of the client. It may concern itself primarily with its natural function, that of producing and interpreting records. The only time that a seismic crew is of value to anyone is when it is actually engaged in producing records which will offer useful information. Proper maintenance plays a part in effectively increasing this useful productive time, with a direct economic benefit.

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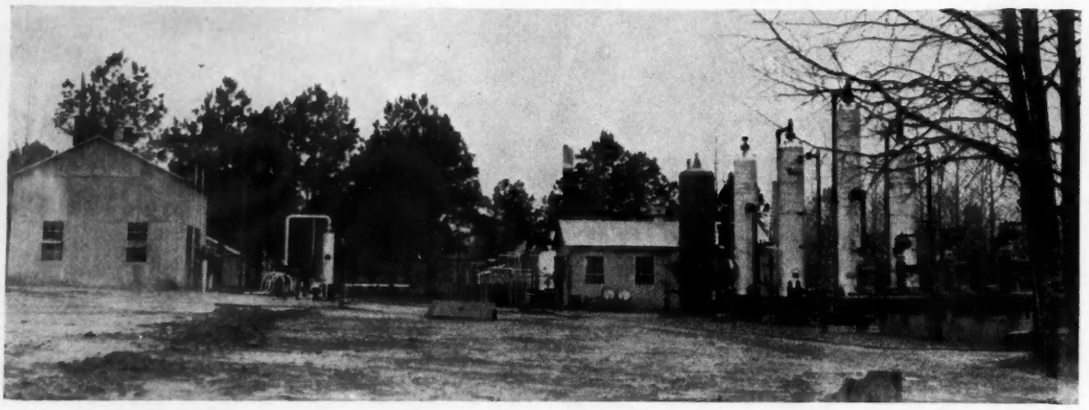


Recycling plant operated by Portex Oil Company, Joaquin, to handle gas that otherwise could not be produced.

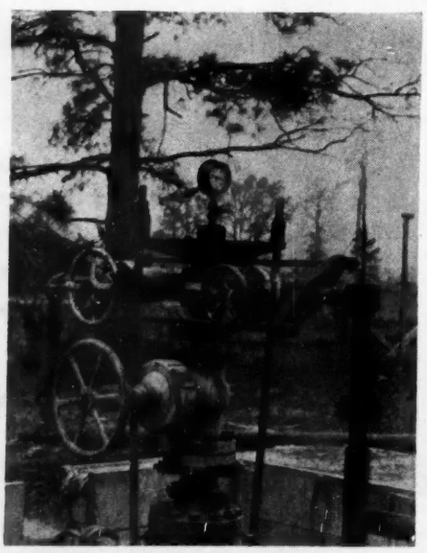
Field's Life Sustained by Recycling Plant

By BRAD MILLS, Associate Editor

A RECYCLING plant in the Joaquin, Texas, field, Shelby County, has made possible the profitable utilization of a large gas supply that otherwise could not be used. Remotely located along the state line, this semi-distillate field has remained active from a producing standpoint solely because of an energetic plan to remove gasoline from the gas and return the dry gas to the producing formation. Although the field has shown some oil, it ordinarily is classified as a gas field. Development has been limited to less than a half dozen tests.

Three wells have been completed by Portex Oil Company, principal operator in the field and owner of the recycling plant now handling wet gas from two of these wells. A third well is being used as an injection well for the dry gas.

Gas comes from the wells at a pressure of about 2250 pounds. It is passed through a series of separators, the pressure being reduced to about 1350 pounds by chokes. Gasoline extraction is accomplished altogether by a series of separators, chokes and cooling coils.



Injection well being used in the Joaquin gas field, Texas.

The gas is picked up at 1350 pounds by the compressors and returned to the injection well at a pressure of about 2350 pounds, only one compressor stage being used. About 12 million cubic feet of gas is handled daily, and the gasoline recovery is around a half gallon per thousand cubic feet.

The producing formation is found at 5000 feet, and the gas sand is nearly 200 feet thick. The field is rated as a gas reserve of major importance.

A 6-cylinder, "L" type compressor is used. It is the 600-horsepower type and drives four 3¾x14-inch compressor cylinders. The power cylinders are vertical and the compressor cylinders are horizontal.

The company is experimenting with an ammonia cooling and treating system, but has not concluded its work along this line.

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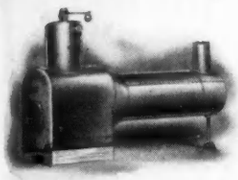

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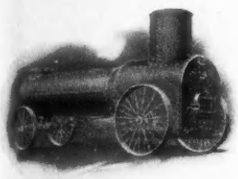

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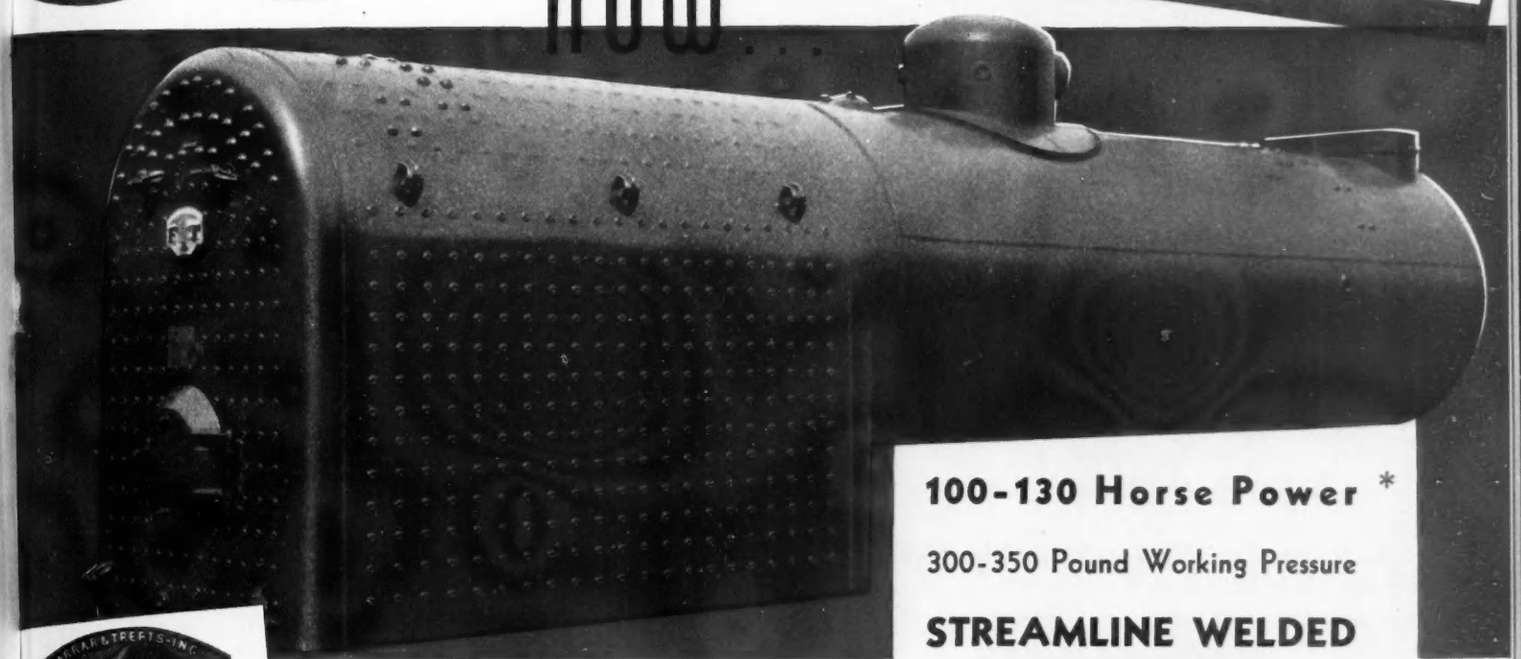

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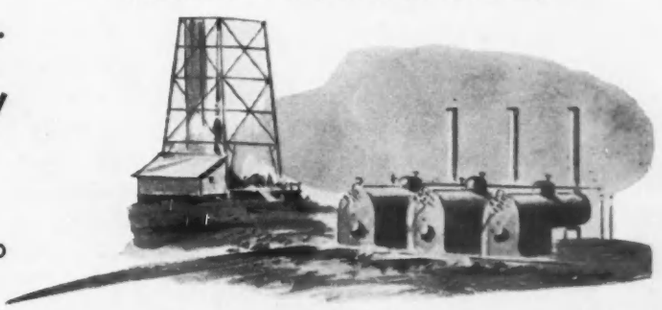

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CONTINENTAL

Preliminary Micromagnetic Eola Structure

Early structural interpretation of local magnetic anomaly at Eola is substantiated by recent drilling

By W. P. JENNY,
Consulting Geologist and Geophysicist

IN THE OIL WEEKLY of May 15, 1939, Wm. M. Barret has published a magnetic reconnaissance survey of the Cheneyville and Eola fields, in Avoyelles and Rapides parishes, Louisiana. The survey shows conclusively that these two structures yield magnetic anomalies, which can be discovered by an accurate magnetic survey, even if the station interval is as large as one and a half miles.

Barret judges from his survey that the magnetic method is an ideal reconnaissance method for structures along the Sparta-Wilcox trend.

As has been shown before by various writers, including Barret, the magnetic method is also an ideal method for the more detailed investigation of structures. In as much as the present writer has made a preliminary micromagnetic survey of the Eola prospect in late January, 1939, he thinks that the more detailed data on the structure proper might be of interest to the oil fraternity.

The structural interpretation of the local magnetic anomaly at Eola, as shown on the accompanying map, takes into consideration a regional increase of the magnetic intensity, which is due to a down-dip thickening of the magnetic Wilcox section. The micromagnetic interpretation has been made in the early days of February and has been substantiated by recent drilling.

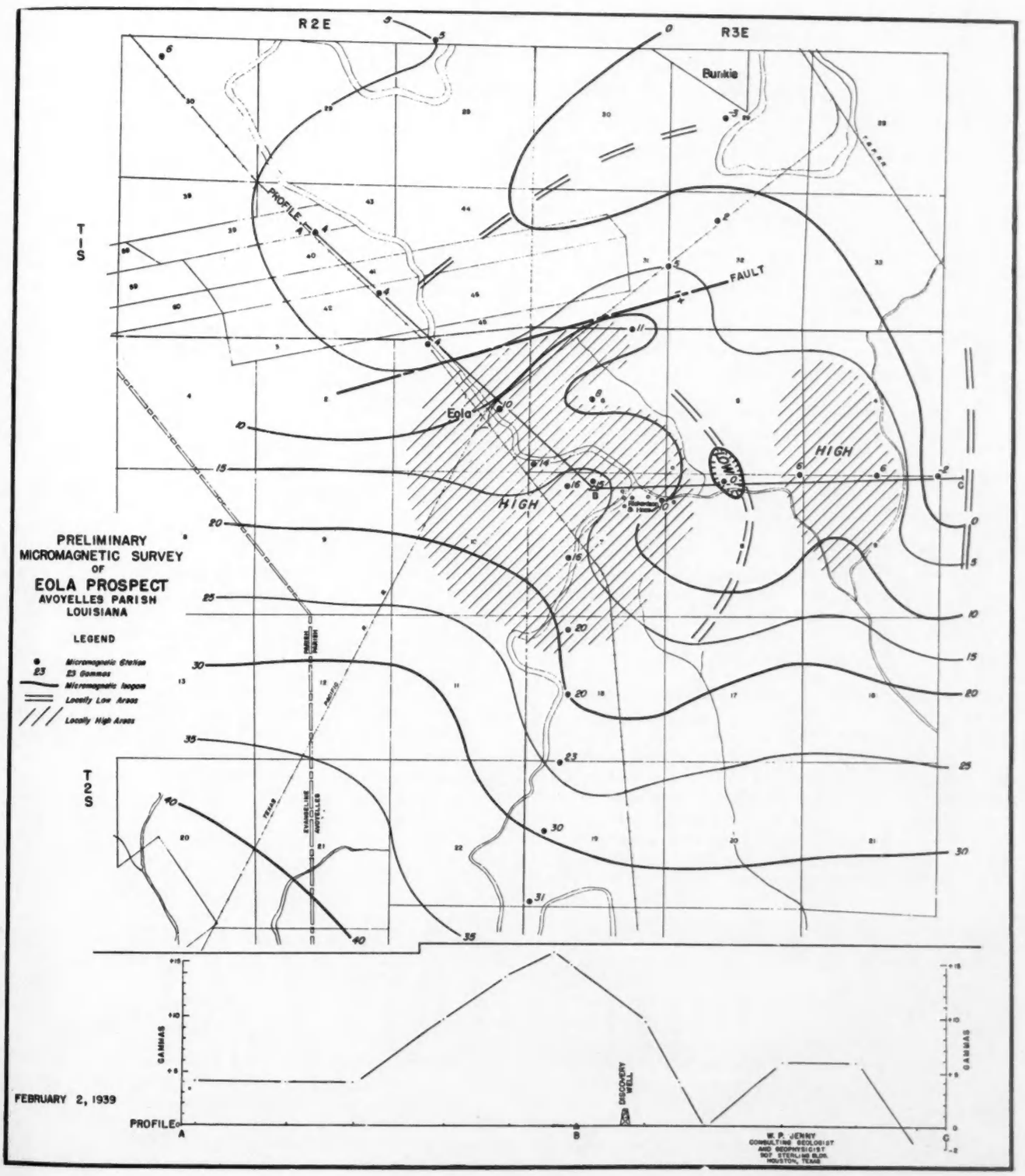
The cause of magnetic prospecting has been advanced greatly recently by the successful development of the polar core orientation method. It is quite evident now, even to a layman, that some of the sediments must contain magnetic material, if the cores taken in such formations preserve remanent magnetism of sufficient strength to allow an orientation of the cores in the laboratory.

In the Gulf Coastal area it appears that the lower Miocene formation acts as the main magnetic stratum. Detailed micromagnetic surveys on Gulf Coastal structures have been published by the writer for the Anahuac field, Chambers County, Texas (Micromagnetic Predictions are proven by Drill; THE OIL WEEKLY, June 14, 1937), for the Amelia field, Jefferson County, Texas, and others.

In Southwest Texas the magnetic method is credited with the discovery of a number of oil fields and ranks by now among the generally accepted geological tools.

Based upon recent developments and extended experiences in various parts of the Gulf Coast, Mid-Continent and Michigan, the writer is satisfied that within a near future accurate regional magnetic surveys will be accepted as a highly effective reconnaissance method under most any geological conditions and that a detailed micromagnetic map of a prospect will be considered as one of the essential and necessary suppositions, before locations are made, for wildcats as well as extensions to proven fields.

Survey of the



Selective Exclusion of Fluids from Wells

By PAUL D. TORREY,
The Sloan and Zook Company, Houston, Texas

PART II

V. Methods Employed in Squeeze Cementing

a. *Squeezing Without a Cement Retainer*

The earliest form of squeezing cement slurry in oil wells was merely to place the slurry through tubing in the lower part of a well, then to raise the tubing to a safe distance above the slurry, and then to impose pump pressure on the well. This required moving the cement slurry after it had been placed and had set partly. This method of squeezing was limited, owing to the increased resistance of the slurry due to the partial set, and to the strength of the casing to withstand the pressures applied; and because the method did not provide for breaking down any film or other obstruction on the face of the formation before the slurry was introduced.

One of the first applications of squeeze jobs was in connection with the cementing of leaking casing. The method employed is relatively simple, but does embody the primary principle of squeezing, in that the slurry is forced under pressure into the leak. After the position of the leak has been ascertained, the first step in shutting it off is to set a bridge plug just below the leak. Tubing then is run into the well, until the bottom of the tubing is just above the leak. The top of the tubing is suspended on a casinghead equipped with a stuffing box so that the tubing can be raised, if necessary, while pressure is being applied. After the tubing has been run to the point desired, the casinghead valve is opened, and circulation established. Cement slurry then is pumped down the tubing; and after the tubing has filled with slurry, the casinghead valve is closed, and the cement forced to move through the leak into the space behind the casing by continued pumping. When a predetermined amount of cement has been placed, or when the pressure begins to build up at the casinghead, the leak probably is sealed. The casinghead valve then is opened, the tubing raised a few feet, and the cement remaining in the casing washed out by reverse circulation through the tubing. Sufficient time is allowed to permit the cement to set, and the tubing then is pulled, the fluid bailed out, and the casing tested. If the leak still persists, the procedure is repeated until the water is shut off.

In squeezing to shut off bottom water, the tubing first is run to the bottom of the hole, and then raised a few inches. The top joint or joints of the tubing used should have external-flush joints, in order that the tubing may be raised through a stuffing box in the casinghead under pressure. A valve is installed on the top of the tubing to act as a choke, and casinghead connections made between the casing and tubing to permit reverse circulation when desired. With the casing open, circulation is established and maintained until the circulating fluid is equalized—after which water is pumped down through the tubing, with the casinghead and choke open. When the water reaches the bottom of the tubing, some of it is allowed to go into the annular space behind the tubing—thereby flushing any loose solids from the face of the formation. The casinghead then is closed, and pump pressure applied to the water to the point where it will enter the formation. When the pressure declines to a minimum, the desired amount of cement slurry is mixed and forced down through the tubing and out against the formation following the water. By watching the pump pressure required to force the cement out against and into the formation, pumping may be discontinued when the pressure reaches the maximum pressure applied to the water.

If the amount of cement slurry pumped into the tubing is sufficient to fill all of the tubing, the casinghead is closed when the lower end of the cement column reaches the bottom of the well. If the amount of cement slurry used is not sufficient to fill the tubing, circulating fluid is pumped into the tubing following the cement. In either case, the casinghead is closed as soon as the lower end of the cement column reaches the bottom of the well. With the casinghead closed, and by continued pumping of the circulating fluid into the top of the tubing under pressure, the cement slurry is forced out against the permeable formation that it is desired to shut off. Pumping is maintained until the pressure limit has been reached or until all of the cement slurry has been pumped out of the tubing, except for a sufficient amount which must be left in the tubing to prevent contamination when the tubing is raised. The cement having been placed, the tubing then is raised under pressure through the stuffing box to a point above the intended level of the plug-back, and reverse circulation established to wash the excess cement from the well. After all of the cement has been removed, the tubing is raised several hundred feet; the casinghead again is closed, and pressure applied through the tubing. The well then is shut in, under the same pressure that was used to squeeze, until the cement has had time to set.

In wells where the sand possesses a low oil saturation and a relatively high permeability, the initial pressure required to introduce water may be the minimum pressure. Some wells of this type may build up pressure rapidly when cement slurry reaches the formation to be squeezed; and in other wells, where the sand permeability is still higher, the cement slurry even may be placed without a material increase in pressure. Such cases may require special, self-sealing, fibered cement to effect a satisfactory shut-

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off, and more than one squeeze job may be required.

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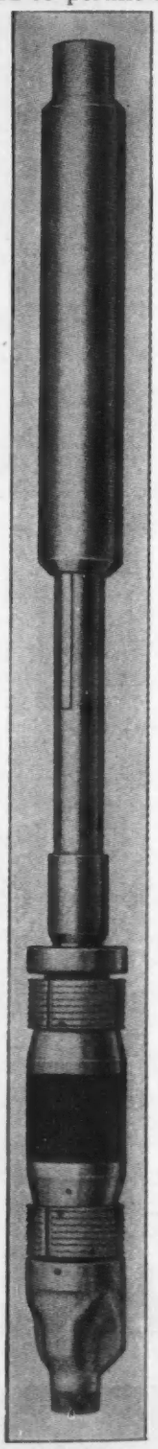


FIGURE 1
Cement Retainer and Circulation Joint.

Shutting off large volumes of free gas which may occur above the oil pay may be effected before the casing is run by drilling a full-gauge hole to the top of the oil pay, and then drilling a reduced-sized hole through the oil pay. A tapered wooden plug then

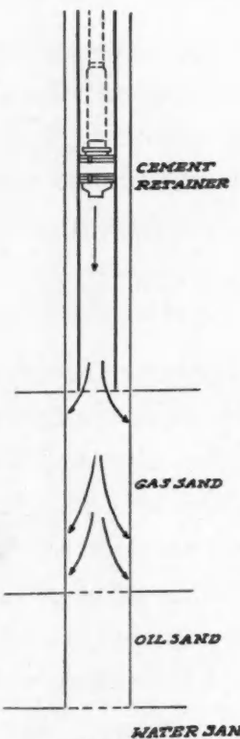


FIGURE 3
Squeeze Cementing.
Squeeze cementing to shut off gas in open hole with no shale break separating gas pay from oil pay.

is driven into the reduced hole, and cement squeezed into the gas-bearing formation—using the same general procedure that is used to shut off bottom water. When the gas pay has been cemented off so that it will not take any more slurry at the maximum pressure the cement is allowed to set for a predetermined period, and then drilled out. The casing then is run to the top of the reduced hole, and cemented in the customary manner. A squeeze job of this type may not only reduce materially the gas/oil ratio, but it also will prevent a loss of the cement slurry into the gas pay, and thus permit the cement to move upward on the outside of the casing to the desired height.

Squeeze-cement jobs of the type just described, for the purpose of excluding water, more commonly are employed in work-over jobs in which water has appeared in the well after a considerable period of oil production. Their greatest disadvantage results from the fact that very high pressures cannot be applied generally without serious damage to the casing. As extremely high pressures frequently are required, particularly in the case of wells in new fields with high bottom-hole pressures, the degree of success that may be anticipated from squeezing in open formation usually will be less than squeezing with a cement retainer, set just above the point where it is desired to force the cement.

In all squeeze jobs of these types the use of electrical logs or photoelectric recording devices to establish the contact between the water and oil, or between the oil and the gas, will prove to be most helpful in placing the cement at the proper position.

b. *Squeezing with a Cement Retainer*

A cement retainer consists essentially of a rubber-packing assembly with a back-pressure valve at the

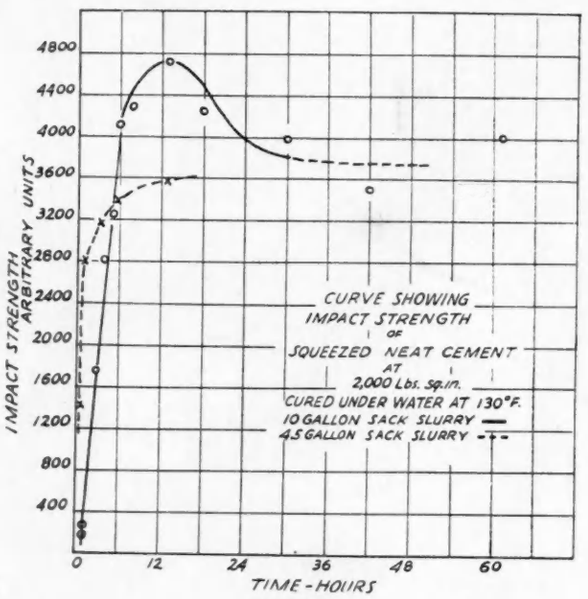
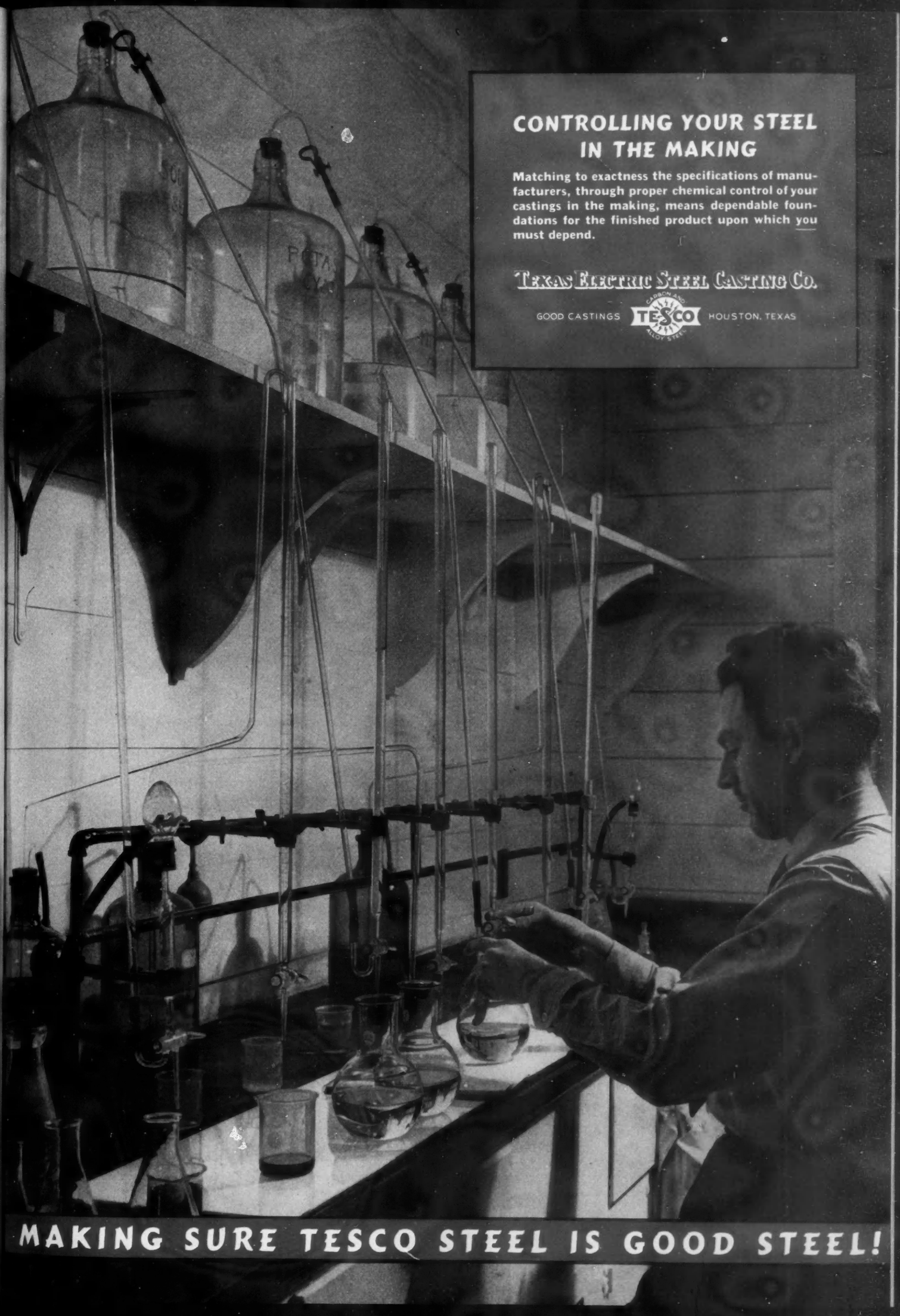


FIGURE 2
Curves Showing Impact Strength of Squeezed Neat Cement.

bottom, which is used to keep any pressure applied from the casing and to hold the pressure on the formation that it is desired to squeeze. The cement retainer is run into the well on a circulation joint, which, in turn, is connected to tubing or drill pipe. The retainer itself is made of drillable material, and is connected to the circulation joint with left-handed square threads. The circulation joint provides for the bleeding off of fluid whenever desired, as well as for facilitating the removal of the tubing from the hole. A cement-retainer and circulation-joint assembly is shown in Figure 1.

The cement retainer is tripped, after it reaches the position in the casing or liner desired, by hydraulic action applied by the pumps at the surface and transmitted to the retainer through the pipe on which it is run. The retainer is set by two sets of annular, segmented slips which hold the rubber packing against the casing or liner, and thus prevent either upward or downward movement of the retainer in the hole. The valve in the circulation joint may be closed or opened at any time desired, after the retainer has been set, by applying and relieving strain on the pipe.

The use of the cement retainer provides much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greater flexibility of operations than was formerly possible. The retainer, therefore, may be used in various ways and, consequently, it is desirable to examine thoroughly the specific conditions that it is proposed to correct in order to select the procedure most applicable to the problem at hand. Proper conditioning of the well before the cement is pumped in, and the selection of the proper place to set the retainer, are very important. The method that will be used will depend, of course, on the objective desired—there being some difference in the procedure that best may be applied to the shutting off of gas or water—and whether the job to be performed is in connection with the original completion of a well or a subsequent work-over job.

In any event, we may presume that the well has been conditioned properly and the retainer has been set at the point desired. Circulation then is established through the circulation joint; and this having been done, the valve in the circulation joint is closed, and from 10 to 50 barrels of water pumped in under such pressure as may be required to break down the formation resistance—careful attention being paid to the initial maximum pressure required to break down the formation, and to the subsequent decline to the minimum pressure. When a minimum pressure has been established, the well is regarded as being in condition for squeezing, and the cement then is mixed into a slurry of a consistency of approximately 15 pounds per gallon, and pumped down the tubing following the water. The amount of cement required sometimes can be estimated in advance by the differential between the initial break-down pressure and the minimum pressure, and by the volume of water pumped in to attain the minimum pressure. If the pressure increases and begins to approach the break-down pressure, as the slurry is being pumped, it is probable that a successful shut-off of either water or gas, as the case may be, will result from a one-batch job. When the desired pressure has been reached, any excess cement remaining in the tubing can be by-passed through the circulation joint and flushed from the hole. If, however, the pressure does not build up as the slurry is pumped, it is probable that a multiple-stage introduction of cement will be required to bring about the results desired.

It should be emphasized at this point that there is a danger of collapsing casing under conditions where the casing has not been cemented securely just above the shoe, and where the retainer is set in the bottom of the casing for the purpose of squeezing. If the casing is not cemented properly, the squeeze pressure will be transmitted up along the outside of the casing to a point above the retainer, where it may collapse the casing. This actually has occurred in several wells, and for that reason certain companies now set the retainer from 50 to 100 feet up from the bottom of the casing, or above the perforations, to guard against this trouble.

After the slurry has been pumped through the cement retainer, the connection between the retainer and the circulation joint is broken, and circulation is established to eliminate any danger of the possible plugging of the tubing by the presence of some obstruction which would tend to hold cement in it. The tubing and circulation joint then are pulled, leaving to be drilled up only the body of the cement retainer in the well. Pressure, of course, is maintained below the retainer, and cement is prevented from coming up into the hole through the retainer by the back-pressure valve.

When a perforated liner has been set below the casing, it is sometimes possible to squeeze through the liner—although generally better results are obtained if the liner is pulled. The cost of pulling the liner may be so great that it may be good economy to try to squeeze through it; and if this is done, the retainer should be set above the top of the liner.

A thorough cleaning of the hole will improve materially the probability of success of all squeeze-cement jobs; and when squeezing is done in open hole, it is becoming common practice to wash down the surface of the formation, and even to clean it with a side-wall scraper, before squeezing operations are commenced. The face of the hole may be cleaned further by washing with a considerable volume of cement to assure against contamination. On some jobs from 25 to 100 sacks of cement purposely are wasted to make sure of this. Slow-setting cements are used extensively when high bottom-hole pressures and temperatures are encountered. In squeezing in low-pressure zones, and particularly when the job is done in multiple stages, common portland cement may be used successfully. The common cement will set faster and, therefore, tend to build up pressure more rapidly. A mixture of bentonite with the cement is sometimes used with good results, the bentonite tending to reduce the volume of the slurry by the absorption of water. The success of any squeeze-cement job frequently will be indicated by the final pressure that is obtained; and, as later will be shown, a final pressure of 3000 pounds per square inch or more seems to give the best results in sand formations.

The cement retainer and the cement remaining below the retainer should be drilled out of the hole at the time when the cement is toughest and most resistant to shock and consequent fracturing or, in other words, during the period of its greatest impact strength. Some experimental work recently performed by E. A. McClure of Baker Oil Tools, Inc., upon the suggestion of Norris Johnston, of General Petroleum Corporation, which as far as is known has not been confirmed by actual field results, would tend to indicate that the drilling-out time might be reduced materially—from the general practice of waiting about 48 hours for the cement to set—with beneficial effects. On one type of cement some empirical data, derived from McClure's experiments, would tend to support this view. As shown in Figure 2, when using a 10-gallon-per-sack slurry, the cement reaches a maximum impact strength in about 13 hours; and when using a 4½-gallon-per-sack slurry, the results are approximately the same. It is, however, interesting to note that the curve of the 4½-gallon-per-sack slurry reached a strength in less than 2 hours, equivalent to the 10-gallon-per-sack slurry in about 4 hours, although the peak of both weights of cement occurred at approximately the same time. It is also notable that the 10-gallon-per-sack slurry had a much higher peak.

It must be remembered always that the water-cement ratio is a factor in the strength of the final set of the cement placed in a well. The less water used, the denser will be the cement; and the thickest slurry that can be handled probably will give the best results. The average cement requires about 20 percent water for complete hydration; but such a mixture is not pumpable, and about twice that amount of water is the least that can be used. Although a slurry weight of 15 pounds per gallon is used more commonly, slurries having weights of from 16 to 17 pounds per

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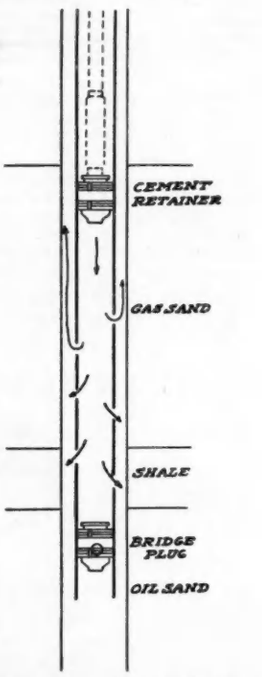
gallon are being placed successfully with very good results. It has been found that, by using a very heavy slurry of the new heat-resisting cements, almost any desired pressure against the sand can be built up—particularly when the cement is introduced in multiple stages. When slow-setting cements are used, ample time is provided for the cement to reach its destination before it becomes unpumpable due to initial set; and, as is the case in all cementing operations, a consistent weight of slurry is very important. Frequently a light mix, having a weight of approximately 12.5 pounds per gallon, first is run into the hole to allow the water in the slurry to carry finer particles of the cement into the formation, and to give support to the cement that is strained out to form a sheath on the wall of the hole. This lighter mix then can be followed with a heavier slurry, which often may be an ordinary oil-well cement, when the first mix is made with slow-setting cement.

After the cement retainer and cement that is left below the retainer have been drilled out, the soft cement that may remain on the face of the oil pay in open-hole jobs can be removed by washing or swabbing. In a few instances wall scrapers have been used for this purpose. The well then may be brought back on production in the normal manner, with the hope that the results anticipated will be justified by an actual improvement in the productive characteristics of the well.

When squeezing is done through perforations, it is observed that, although the cement will not set in a live oil pay, a cement sludge made up of a mixture of mud and cement may be left behind the pipe—thereby oftentimes making it quite difficult to induce the well to flow. This heavy, viscous material sometimes appears to clog the perforations to the extent that even drill-stem tests may be failures; in such instances, two remedial steps have been devised which have given positive results. If the material causing the trouble is considered to consist primarily of drilling mud, a solution of 100 pounds of quebracho and 50 pounds of tetrasodium pyrophosfate in 50 barrels of water can be spotted on bottom and then squeezed through the perforations under pressure. This deflocculating agent breaks down the sludge, and then permits the well to be completed in a normal manner. If the clogging material is predominantly cement, a 15-percent solution of hydrochloric acid can be introduced to break down the sludge. Acid treatment gives quite consistent results, but it involves the risk of destroying the results of the squeeze-cement job in the exclusion of gas or water.

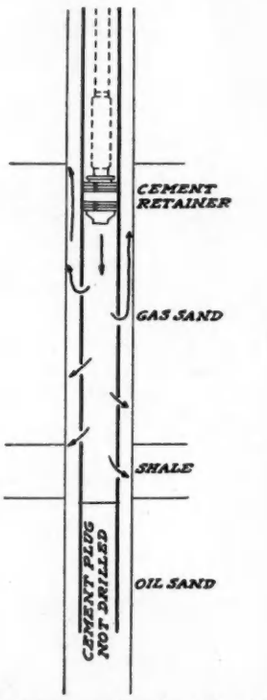
Some attention has been devoted to the use of various chemicals with the water that is pumped in prior to the introduction of the cement to assist in the cleaning of the sand surface. It is understood that the results obtained from this procedure have been somewhat encouraging, but are not sufficiently conclusive to justify their publication.

As has been stated previously, the use of the cement retainer provides facilities for handling many subsurface conditions, as well as the obvious advantage that will result from the placing of the cement under the highest possible pressure, and then confining the cement at the point desired without allowing the pressure to be relieved until the proper set has been attained. Furthermore, the squeeze can be applied through perforations in the casing as well as to open hole directly below the casing, and squeezing can be conducted in connection with the original completion of a well, or as a later remedial measure to correct some error in the original completion or changes in the reservoir condition which may have taken place subsequent to the original completion. It is beyond



Squeeze cementing to shut off gas after well completion when casing has been set through the gas pay and the oil pay, but a high gas-oil ration still exists.

FIGURE 4
Squeeze Cementing.



Squeeze cementing to shut off gas during the time of original completion before cement remaining in the casing opposite to the oil pay has been drilled out.

FIGURE 5
Squeeze Cementing.

the scope of this paper to describe in detail every possible application of squeeze cementing with a cement retainer. Therefore, it is proposed to describe briefly some of the more common types of application—illustrating the methods employed by simple diagrams, and restricting our discussion of the same to any important differences in procedure that do not conform to the general information that has been presented previously.

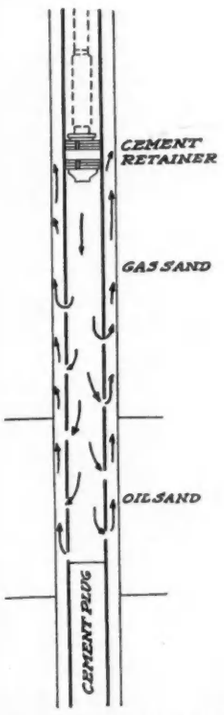
1. *Squeeze Cementing to Shut Off Gas in Open Hole with No Shale Break Separating Gas Pay from Oil Pay*

This method may be used in a well wherein the downward migration of gas from an expanding gas cap has brought excessive quantities of free gas into the well where normal oil production formerly has been obtained, and where it is not feasible to set and cement a blank liner and squeeze through gun perforations. It might be used also when a small size of casing has been set and cemented at the top of the sand and, after the sand has been drilled, it is found that the greater part is gas pay and only a thin lower part is oil pay. The small size of the hole might make it quite difficult to set and cement a liner and then perforate. The retainer, therefore, is set about 5 feet above the casing shoe, and cement squeezed into the formation under as high pressure as is feasible.

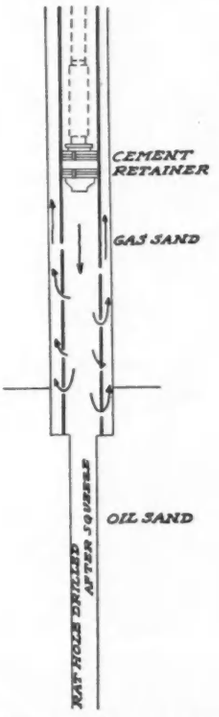
2. *Squeeze Cementing to Shut Off Gas After Well Completion When Casing Has Been Set Through*

the Gas Pay and the Oil Pay, But a High Gas-Oil Ratio Still Exists

In using this method, the casing opposite to the gas pay first is perforated. A cement retainer then is set at the top of the oil pay as a bridge plug. Another retainer is set at the top of the gas pay, above the highest perforation, and cement then squeezed into the formation. After the retainers and cement have been drilled out, the casing opposite to the oil pay is re-perforated and the well re-completed.



Squeeze cementing to shut off gas when casing is set to bottom of sand, and both gas and oil pays have been perforated.



Squeeze cementing in gas pay before oil pay is drilled.

FIGURE 6
Squeeze Cementing.

FIGURE 7
Squeeze Cementing.

3. *Squeeze Cementing to Shut Off Gas During the Time of Original Completion, Before Cement Remaining in the Casing Opposite to the Oil Pay Has Been Drilled Out*

In applying this method, the pipe is set entirely through the gas pay and the oil pay, but the cement temporarily is left in the bottom of the casing opposite to the oil pay to act as a bottom plug for the squeeze job. The casing opposite to the gas pay is perforated and cement forced through the perforations, with the retainer at the top of the gas pay and above the highest perforation. After squeezing, the hole is drilled down to bottom, and the casing opposite to the oil pay perforated.

4. *Squeeze Cementing to Shut Off Gas When Casing Is Set to Bottom of Sand and Both Gas and Oil Pays Perforated*

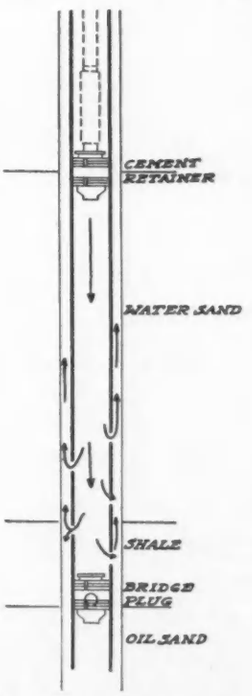
This is sometimes known as the Lockridge method, inasmuch as it has been used rather widely in the field of that name. Both gas and oil pays are perforated, and a retainer set at the top of the gas pay. Cement is squeezed against both the gas and oil pays through the perforations. After the retainer and the cement in the casing have been drilled out, the well is completed, producing through the same perforations through which the cement is forced.

5. *Squeeze Cementing in Gas Pay Before Oil Pay Is Drilled*

This is a simple but, nevertheless, very effective method which also can be applied when a small part of the oil pay has been drilled before the actual contact between the gas and oil has been discovered. The well is carried down to the contact of the gas and oil pay, or slightly into the oil pay. Casing then is run to the bottom of the hole, and cemented. After the cement has set the casing opposite to the gas pay is perforated, a retainer set at the top of the gas pay, and cement squeezed through the perforations. After the retainer and underlying cement have been drilled out, the well is carrid on down through the oil pay, and perforated liner and screen set in the oil pay.

6. *Squeeze Cementing Through Perforations to Shut Off Water from a Salt-Water Sand Separated by a Thin Shale Break from an Underlying Oil Sand*

This method has been used extensively in certain South Texas fields where water sands above the oil pay have not been shut off properly. The wells are drilled through the oil pay, and casing run to the bottom of the hole and cemented. The casing, opposite to the overlying water sands, first is perforated, and a cement retainer then set as a bridge plug in the casing at a point opposite to the break between the water and oil sands. A second retainer is set at the top of the water sand, and cement forced through the perforations. After the cement has set, the retainers are drilled out, the casing opposite to the oil pay is perforated, and the well completed in the normal manner.



Squeeze cementing through perforations to shut off water from a salt-water sand separated by a thin shale break from an underlying oil sand.

FIGURE 8
Squeeze Cementing.

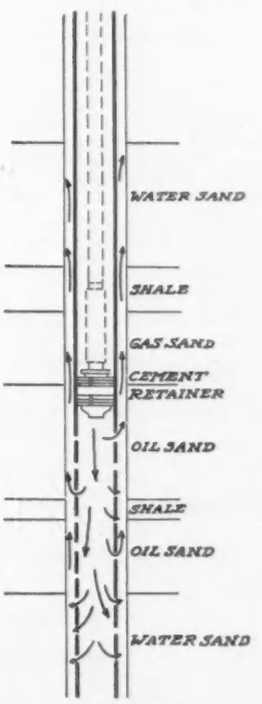


FIGURE 9
Multiple-Batch Jobs.

7. *Squeeze Cementing to Shut Off Bottom-Hole Water*

The various methods employed for shutting off bottom-hole water will be discussed fully in a follow-

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ing section of this paper that is particularly devoted to plug-back operations.

8. *Multiple-Batch Jobs*

Multiple-batch cementing consists of running cement in stages of from 35 to 100 sacks, and then displacing the cement in the tubing with sufficient water to clear the retainer and perforations of cement. The cement is allowed to set for about 3 hours, and the process then is repeated successively until sufficient pressure is obtained to insure a successful job; or, if desired, multiple batches may be placed in a continuous operation without allowing time for the cement to set, each batch being separated by water.

The continuous operation is employed usually when the amount of cement required cannot be estimated in advance, and when additional cement is found to be advisable if the pressure necessary to put one batch away is not high enough to indicate that sufficient slurry has been forced against the formation to give the most effective result. The water following the cement is bled out into the annular space between the casing and tubing by opening the circulation joint. The cement making up the next batch then is pumped through the retainer by closing the circulation joint. By following this procedure, cement—and cement only—is forced into the formation. The batches can be continued until the desired pressure has been reached.

Generally the use of the multiple-batch process permits the building up of a final squeeze pressure that is higher than the formation pressure. Although this result may be achieved from an equal number of separate squeeze jobs, the objective may be accomplished in one work-over, and only one shut-down for the cement to set. The hole then may be drilled out and tested.

Multiple-batch jobs are used frequently when it is desired to shut off both water and gas in the same operation. This method of squeezing also has been used successfully in fractured or faulted formations or when low-pressure zones have been present.

9. *Re-Cementing Pipe*

If the first cement job has been a failure, thereby permitting water to come into the well or providing an avenue of escape up the hole on the outside of the casing for the cement which it is desired to squeeze, the cement retainer is more useful in forcing cement around the casing shoe under conditions in which free circulation cannot be obtained by ordinary cementing methods. Furthermore, pressure may be maintained until the cement is set, which in most cases is a very important item. Multiple-batch cementing may be required under certain conditions to effect a satisfactory re-cementation.

10. *Squeeze Cementing to Shut Off Casing Leaks*

The method employed is essentially the same as that described previously when a retainer is not used. A cement retainer may be used as a bridge plug below the leak, and a second retainer then is set in the casing above the leak. Cement is forced into the leak; and if a satisfactory pressure is not built up, it may be necessary to resort to a multiple-batch operation to obtain the desired results.

Part 1 of this paper, which was presented at the Mid-Year Meeting of the American Petroleum Institute at New Orleans, appeared on page 26 of the issue of May 22. Part 3 will appear in an early issue.

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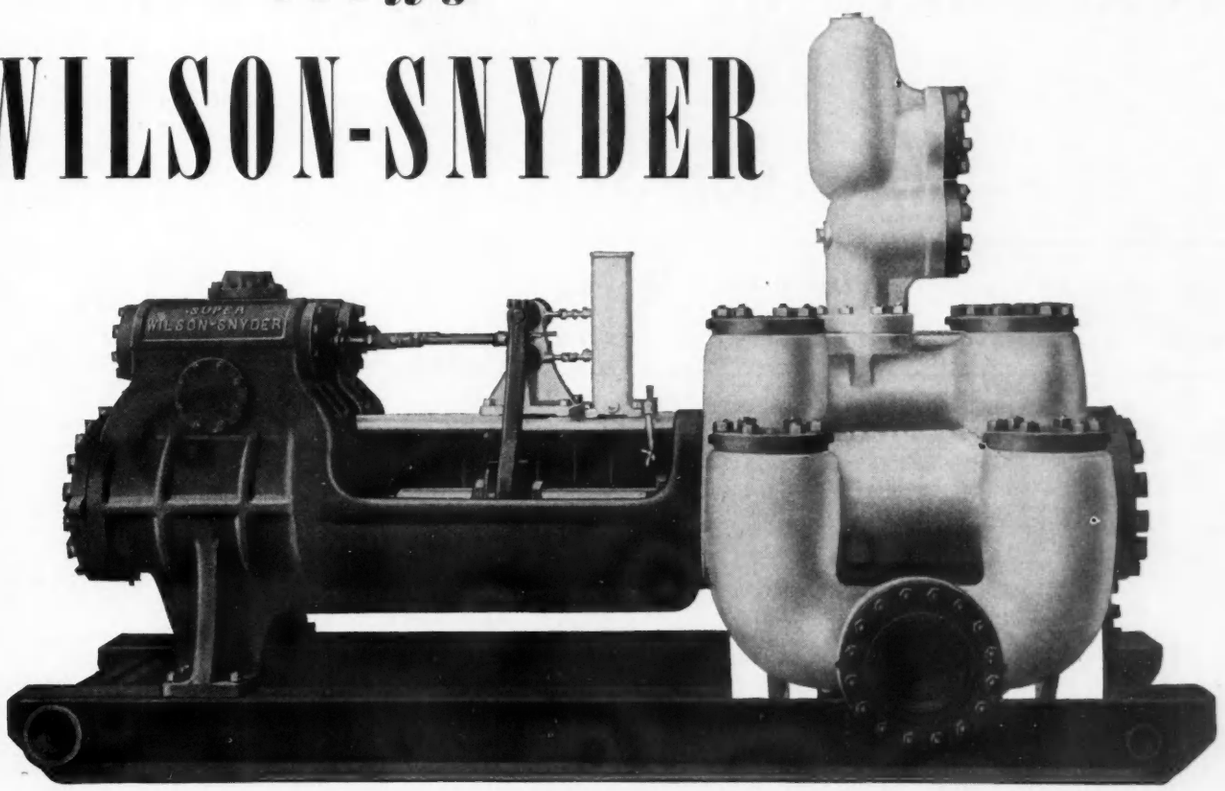

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LOUISIANA: Rodessa; Lake Charles; New Iberia; Gretna.
ARKANSAS: Magnolia.
SALES OFFICES — Tulsa, Oklahoma; Dallas, Texas; Shreveport, Louisiana.

Italian Notes

Edited by
WM. V. GROSS, Associate Editor

Production of crude running below last year.

Output of refineries from domestic oil increases.

Italian production of crude petroleum during February, 1939, totalled 1005 metric tons, an increase of 72 metric tons or 7.72 percent over the January, 1939, production of 933 metric tons; however, the total production of the first two months of 1939 is still 8.33 percent under that of the corresponding 1938 period, according to John L. Goshie of Rome.

Production of petroleum products (from domestic crude) continued to maintain the upward trend evident since January, 1939. The aggregate volume produced during February, 1939, totalled 1459 metric tons, as compared to 763 metric tons during January, 1939. The aggregate volume produced during the first two months of 1939 amounted to 2222 metric tons, as compared to 1894 metric tons produced during the corresponding 1938 period.

Official statistics for the production of domestic crude petroleum and petroleum products, during February, 1939, and comparative periods are shown in the accompanying table.

During the period from January 1 to February 25, Italy imported 2,570,687 quintals of crude petroleum valued at 62,402,000 lire. These imports represent an increase in volume of 19.91 percent but a decrease in value of 6.09 percent as compared to the imports of the corresponding 1938 period, which were reported at 2,143,840 quintals valued at 66,450,000 lire.

United States held the position of principal supplier; whereas, during the corresponding 1938 period Iraq held that position. Imports from the United States during January 1-February 25 amounted to 1,364,714 quintals (53.09 percent of total), an increase of 79.50 percent over 760,304 quintals (35.46 percent of total) of the corresponding 1938 imports.

Iraq was the second principal supplier during the 1939 period under review. It is significant to note that the imports from Iraq dropped from 861,868 quintals (40.20 percent of total), imported during January 1-February 25, 1938, to 294,421 quintals (11.45 percent of total) during the same 1939 period.

Current imports from Albania show a sharp increase over last year's comparative period, amounting to 250,489 quintals (or 9.74 percent of total) during January 1-February 25, 1939, an increase of 107.54 percent over the corresponding 1938 imports of 120,695 quintals (5.63 percent of total).

Sharp increases in current imports are noted from Venezuela, Mexico and Netherlands Antilles. The respective January 1-February 25, 1939 imports amount to 217,788 quintals, 170,087 quintals and 96,751 quintals as compared to no imports during the corresponding 1938 period.

Aggregate volume of petroleum products produced (i.e., from both domestic and imported crude) during February, 1939, totals 137,357 metric tons, an increase of 2.41 percent over the January, 1939 volume of 134,128 metric tons. The total production during the first two months of 1939 amounts to 271,074 metric tons, an increase of 40.85 percent over the corresponding 1938 production of 192,458 metric tons, says Goshie.

Fuel oil represents the largest sector, accounting for 37.66 percent of the aggregate February production and 38.27 percent of January production, and 38.27 percent of January, 1939. Gasoline ranks second and gas/oil third, accounting respectively for 29.21 percent and 15.26 percent of the total February production and 28.38 and 18.80 percent of January.

Italian Domestic Production—Crude Petroleum and Petroleum Products*

PERIOD	Crude Petroleum	(Metric Tons) Gasoline	Turpentine Substitutes	Kerosene	Fuel Oil	Gas Oil
1939						
January	933	500	....	180	43	40
February	1,005	793	85	433	71	77
Total	1,938	1,293	85	613	114	117
1938						
January	1,124	716	43	356	63	35
February	990	464	15	115	37	50
Total	2,114	1,180	58	471	100	85

Note: * Includes only petroleum products derived from domestic crude.

Await outcome of British Guiana seismograph survey

Results of completion of the seismograph survey in British Guiana, about due to be completed, are awaited with considerable interest by those who have contended that proximity of that colony to Trinidad and Venezuela should enhance chances of developing oil there.

The survey was undertaken for Central Mining & Investment Corporation of London, with Dr. Hans Kugler, chief geologist, in charge of preliminary steps. Concessions of the corporation are on the Corentyne and in the Northwest District, between Morawhanna and Point Playa.

Regarding the general locality, W. F. Halley of Houston, who has drilled a number of water wells in British Guiana, says:

"I drilled a number of holes there for water, none over 1400 feet. No. 63 and the Skeldon test are about 20 miles apart. No. 63 went to 1414 feet where screen was set and a good water well completed. Some black shale was the only interesting thing there, except a little gas at several points. The Skeldon test has two slight shows of oil and samples were sent to England for examination.

"There was some gas in most of the holes I drilled. In several parts of the colony I stopped on granite, but there was some gas in most of the wells. Two tests made in the Northwest District, Point Playa, had gas. As one of them stood full of water about three drops of oil came up per minute."

MEN IN THE INDUSTRY'S NEWS

FLOYD ROBSON AGAIN CHOSEN HEAD OF ENGINEERS CLUB OF TULSA, AYRES RE-ELECTED VICE PRESIDENT

T. D. WILLIAMSON, JR., TO DIRECT AFFAIRS OF JUNIOR MEMBERS' SECTION

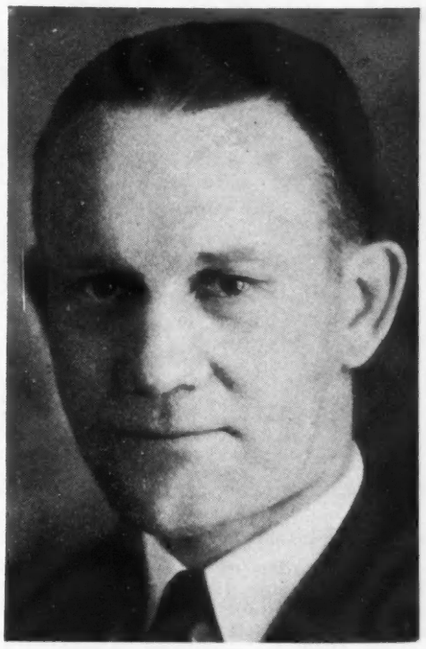
FLOYD W. ROBSON, who served during 1938 and the first half of this year as president of the Engineers Club of Tulsa, recently was re-elected to that post to serve for the 1939-40 term.

Other officers elected were R. G. Ayers, Bethlehem-International Supply Company, executive vice-president; R. W. Ducker, Oklahoma Natural Gas Company, treasurer, and L. G. E. Bignell, secretary. Vice-presidents are W. F. McMurry, in charge of programs; W. A. Melton, public relations; A. A. Hardy, entertainment, and Charles Bloom, membership.

Directors are V. H. Cochrane, P. W. Patterson and J. A. Whitlow. Robson, Ayers and Ducker succeeded themselves in the three executive posts. Bignell, named secretary for the ensuing year, succeeds J. H. Englebrecht, resigned.

In the Junior Group of the Club, T. D. Williamson, Jr., has been named president. Robert O. Walker, executive vice-president; John H. Patterson, secretary. Max R. Wise and R. C. Marr, past president of the Junior Group, are to serve as directors.

The new officers were installed at a banquet May 26. The meeting was also for the purpose of reviewing the activities of the organization during the past year, the work of various standing committees, and to discuss currently active proposals. The Club now has a membership of 420 engineers with headquarters in the Midco Building.



FLOYD W. ROBSON

CHARLES R. BICKELL has been promoted to division manager for Kansas for Shell Oil Company to succeed H. E. Zoeller, who recently was elected vice president and general manager of Derby Oil Company, Wichita. Bickell will move from Tulsa to Wichita May 31.

After schooling at the University of West Virginia and work in eastern fields, Bickell came to Oklahoma and took additional school work at the University of Oklahoma, graduating in 1923. He joined the Shell staff as a geological engineer in the Tonkawa area. Later he was in the Oxford, Greenwich and McPherson field developments in Kansas, being district superintendent in the latter area in 1933. Later he was in Kansas and returned to Wichita in 1936 where he remained until 1938, when he was transferred to Tulsa headquarters.

W. C. ADAMS has been appointed manager of the Gulf Coast office of Deep Rock Oil Corporation. He has been in Tulsa headquarters for several years and recently spent considerable time in Illinois. H. L. Stegall, who has been located at Lafayette, Louisiana, has been transferred to the new Houston office and will serve as scout and land man. The concern closed its office at Tyler with opening of the Houston office.

JOE HOARD, president of Hoard Exploration Company, Houston, left by plane last week for New York, where he will sail for Greece to supervise drilling for William Helis interests in the country. He recently shipped several core drilling rigs to Greece.

W. F. NOWLIN, J. P. Scranton and Margaret Hoge Reaves have organized the Mikton Oil Company as a Texas corporation. Headquarters have been established in Houston.

DONALD B. GILLIES and A. B. Parsons, president and secretary of the A. I. M. M. E., paid a visit to the student A. I. M. M. E. chapter of the New Mexico School of Mines on May 15. Other visitors with the party were W. P. Schumacher, chairman, and L. G. Hetrick, past-chairman of the El Paso Metals Section of the A. I. M. M. E., Milward Miller and Robert Dewey of Humble Oil and Refining Company. At noon the visitors, the faculty, and student officers were dinner guests of the school.

ARTHUR R. CARMODY of Shreveport, Louisiana, a vice president of The North Central Texas Oil Company, has been elected a director of that company to fill the vacancy created by the resignation of Milton J. Budlong.

D. A. HOLM, of Phoenix, former geologist for the Arizona state land department, is now acting in a consulting capacity for that body; the change permitting him to devote a limited amount of time to private geological consulting work.

E. S. MARKS, chairman of the board of British Burmah Petroleum Company, London, recently was made a director of National Mining Corporation.

SIR WILLIAM ALEXANDER of London, executive with Kern Oil Company, recently arrived in New York.

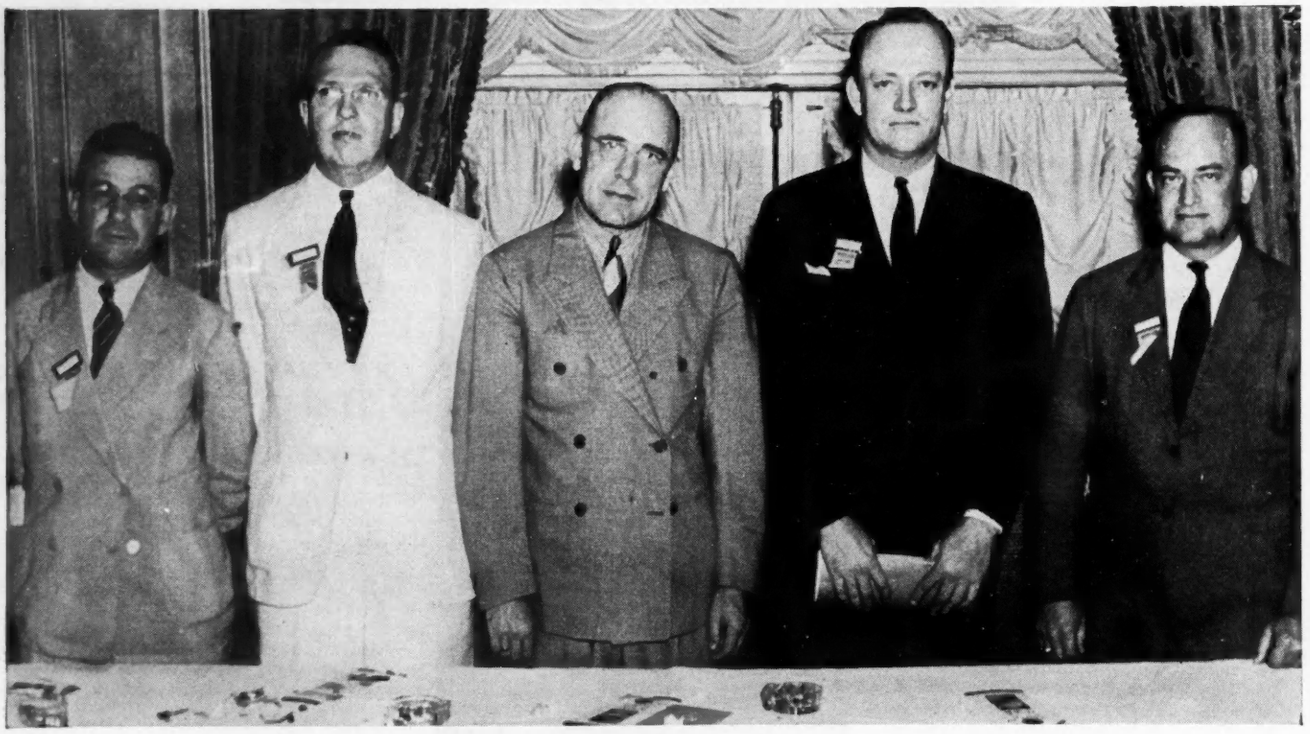
H. A. AXTELL, production superintendent for Magnolia Petroleum Company in the Iatan sector of West Texas, is recuperating in a Dallas hospital from a recent operation.

SAM BARTLETT, Ellsworth attorney, has been appointed Democratic or minority member of the Kansas Corporation Commission. He succeeds Ernest E. Blincoe, whose term expired March 20 and who has been serving since pending appointment of a successor.

TONY FALLETTI, W. C. McBride, Incorporated, was general chairman for the annual spring frolic of the Kansas Oil Scouts Association, held May 26 in Wichita. He was assisted by E. K. Edmiston, scout for Tom Johnson, enter-

ELLIS SHERIDAN

Tool Pusher for Shell Oil Company in the Evangeline, La., field, and his driller, Bennie Simmons.



New Officers of Scouts Association

The National Oil Scouts and Landmans Association of America elected the group shown here as its officials at the annual convention held in Houston May 18-20. From left to right are: C. P. Chisholm, assistant division landman and chief scout for Pure Oil Company, Houston, president of the association; C. J. Bradley, scout for The Texas Company, Tyler, first vice president; Ralph Steinman, chief scout for Sinclair Prairie Oil Company, Tulsa, second vice president; G. R. Kennedy, pipe line scout for Magnolia Pipe Line Company, Kilgore, secretary-treasurer; and H. L. Eversberg, scout for Shell Petroleum Corporation at Baton Rouge, chairman of the executive committee.

tainment chairman; C. A. Black, district manager for Bovaird Supply Company, and K. W. Bumgarner, Gulf Oil Corporation.

JOSHUA S. COSDEN, founder of the Cosden Oil Company, predecessor to the Mid-Continent Petroleum Corporation, was a Tulsa visitor last week.

L. L. WALKER, vice president and field superintendent of Mid-Union Drilling Company, is in Alpine, Arizona.

MASON C. LYONS, Vickers Petroleum Company, has been installed as president of the Petroleum Accountants Society of Kansas. He succeeds J. C. Dial of Aylward Production Company.

F. QUENTIN BROWN, Greensburg attorney, last week was named secretary of the Kansas Corporation Commission. He succeeds Leo Price, Wichita.

DIED:

THOMAS JOE McMAHON of Houston, vice president of The Texas Pipe Line Company and one of five brothers, all of whom were in the oil business, died at his desk of a heart attack during noon hour May 24.

Less than two minutes before he was found dead by J. S. Leach, vice president of The Texas Company, McMahon had been in conference with Leach and B. E. Hull, president of the pipe line company, in an adjoining office. A moment after the conference broke up, Leach went into McMahon's office to ask him to join them in lunch. McMahon, with eves closed, was sitting erect in his chair. He failed to respond when spoken to.

"Come here, Burt. Something's wrong with Joe," Leach said. They found him dead.

Born in Karnes City, Pennsylvania, December 18, 1882, McMahon started his oil career in that state as a young man, serving Producers & Refiners Oil Company, National Transit Pipe Line Company, and Southwest Pennsylvania Pipe Line Company before coming to Houston in 1908 to join The Texas Company as an oil dispatcher. Later he became chief dispatcher and stayed with the organization until formation of The Texas Pipe Line Company in 1917, when he was transferred to the new concern. He became a vice president thereof in October, 1928. He has been a director also of The Texas-New Mexico Pipe Line Company since its organization.

In addition to a widow and four sons, McMahon is survived by four brothers: Timothy L., retired oil man of Gibsonburg, Ohio; John L., independent at Wichita Falls, Texas, who was at one time manager of the North Texas and New Mexico division of The Texas Company; James C., who owns a string of service stations in and around Fremont, Ohio; and Dennis F. of Tulsa, who has holdings in Kansas and Oklahoma and who saw service with The Texas Company in the boom days of Sour Lake and Humble.

Surviving sons are: T. Joe, Jr., of Electra, Texas; John L. of Houma, Louisiana; William, a student at the University of Texas; and Dennis J. of Houston.

I. M. GUBKIN of Moscow, dean of Soviet geologists who presided over the Seventeenth International Geological Congress in Moscow in 1937, died April 21. Born in 1871, he was sent to the United States to study oil deposits in 1917. Following the Russian revolution he became chairman of the Council of the Oil Industry and later became rector of the Moscow Mining Institute. For a period Gubkin was head of the Institute of Research in Petroleum and in 1936 became vice president of the Academy of Sciences of U.S.S.R., in which he founded and became head of the Institute of Combustible Minerals. In 1933 he led the Soviet delegation to the International Geological Congress in Washington, D. C.

NATHAN M. JONES, 64, supervisor of Sinclair Prairie Oil Company's gas properties in Kansas and Northern Oklahoma, died in an Oklahoma City hospital May 16 from injuries received in an automobile accident several months ago. Surviving are his widow and a daughter.

D. C. CHASTAIN, 31, driller employed by Taylor Drilling Company of Centralia, was fatally injured May 21 when the car he was driving struck a bridge abutment near New Memphis. He came to the Illinois basin a year ago from Midland, Texas.

R. B. BRYANT, 52, Dallas operator who had been active in the East Texas, Corpus Christi, Arkansas and KMA fields, died in Austin May 21 of heart disease. Surviving are his widow, a sister and a brother.

THE WEEK'S NEWS SUMMARIZED

Capitols

Conflicting views of marketers and refiners on the proposed divorcement of marketing operations from other branches of the industry were heard last week by a House subcommittee. The fight for the legislation was headed by Paul E. Hadlick, who declared it essential as a means of stopping the monopoly growth in the oil business. It was stated major firms made big profits in the producing business and carried marketing at a loss. Arguments opposing the bill included statements that it would increase the cost of the products by creating additional middlemen, and that it probably would be unconstitutional.

Extension of the Connally hot oil act for a period of three years was agreed upon by the House Interstate and Foreign Commerce subcommittee last week. Action of the subcommittee in rejecting the Senate plan to make the legislation permanent was not unexpected.

A resolution has been introduced into the Texas legislature asking for presidential indorsement of price fixing on crude and refined products produced in the state. The need for the measure was said to lie in the large quantities of oil being sold in Texas under market price, which was reported to be produced in Oklahoma and Louisiana.

The Texas House has passed an omnibus tax bill expected to raise some $17,000,000 for payment of old age pensions. The bill is important to oil men because it raises taxes on crude oil and natural gasoline.

Five bills embodying recommendations of the Illinois legislative investigating committee were passed by the Senate last week. While none of the acts provide for proration, they do call for a degree of control over drilling practices. The bill will now go to the House.

Allowables

Last week, Texas Railroad Commissioner Jerry Sadler threatened to throw open production in the state unless others, particularly Louisiana and Illinois, curtailed more drastically. An oil production battle between states loomed as a result, with Governor Leche of Louisiana proposing that states adjoining Texas enter into an encirclement program to prevent Texas oil entering their states. However, Sadler's threat was not taken seriously by oil men, as it appeared to be directed more to the general public than to the industry.

Meanwhile, the Bureau of Mines, in its regular monthly forecast of consumption, anticipated a sharp increase in demand during June. It predicted a daily average demand of 3,491,000 barrels for domestic oil, the highest for any month since December, 1937, and 65,800 barrels more than in May. This prediction was made although a decrease is anticipated in exports.

Markets

The markets have continued generally firm. Prices of gasoline to dealers and to consumers have improved considerably, although they were slow to advance after the upward movement of refinery prices began.

The continued strength of the gasoline market has had a stimulating effect on the crude oil markets, although some crude still is being sold for as much as 25 cents a barrel under the market in Illinois, while there are a few weak spots elsewhere also.

The executive head of an integrated company about 10 days ago declared that either refined product prices would have to improve or crude oil prices would have to be reduced, so that the raw material and finished products would be in proper relationship.

The firmness of the markets for products lately has indicated that the desired readjustment may occur through improvement of the product prices rather than through reduction of the crude prices.

Anti-Trust

Allegations of conspiracy to fix prices identical to those which formed the basis of the anti-trust indictments returned 3 years ago at Madison, Wis., are the basis of a suit for $250,000 brought against 9 oil companies by a Wisconsin jobber in federal court at Minneapolis last week.

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Allowable Picture

Texas and Louisiana threaten each other with an oil production war . . . A four percent increase in demand for June predicted by Bureau of Mines.

Sadler wants more market for Texas oil

An oil production battle between states was looming last week, as Texas Railroad Commissioner Jerry Sadler continued his attack on oil states that have not joined the curtailment program as stringently as he believes his state has, and as Governor Richard Leche of Louisiana retaliated by suggesting an encirclement program which would prevent Texas oil from entering adjacent states.

Leche proposed that Arkansas, Oklahoma and even Mexico join in the movement, if Texas opened up its wells as Sadler had urged in an earlier statement to the press.

Some observers in Austin believe that besides his purpose in attempting to increase the market for Texas oil, Sadler is interested in keeping before the public the activities of the Texas Railroad Commission. A study of his statements indicate that they are designed to appeal to the average reader rather than to the oil man whose business is regulated by the commission.

Sadler has proven to be a shrewd politician and although he has made mistakes since he took office on January 1, many of these have been corrected in large measure as conditions warranted.

The new commissioner has announced already that he favors keeping Texas in line with market demand through June, and it is believed that because of this statement, he would readily approve an order calling for further shut-downs during the month of June, as estimates by the United States Bureau of Mines indicate that Texas is producing more oil than will readily be absorbed by the market.

Another indication that Sadler may be following this course, is his personal investigation of oil sales below posted prices, which he says have been taking place in Texas recently. Since Sadler has gone to the trouble of inquiring into this question personally, it is believed that he would be more amenable to an order further restricting production, at least through the month of June.

Whether he would agree to continue this program through July and August cannot be predicted with any degree of accuracy; however, there is every reason to believe that the new commissioner is not as radical as his statement might imply, and for that reason it is unlikely that further orders will be issued that will cause the furor created by the April proration order, when radical cuts were made, most of which were restored within a few days.

Bureau sees big crude demand increase in June

Anticipating a sharp increase in consumption in June, a daily average demand of 3,491,000 barrels of domestic crude oil is forecast by the Bureau of Mines in its monthly report.

The June figure, the highest for any month since December, 1937, is 65,800 barrels, or 2 percent, more than the estimate for May and 4 percent above the actual demand in June, 1938.

Runs to stills during the coming month are estimated by the bureau at 3,317,700 barrels a day, 188,400 barrels higher than the actual average for June, 1938. The estimate for crude oil exports, however, is materially less, 5,900,000 barrels against 7,424,000 barrels a year ago.

The bureau pointed out that daily average production and runs to stills during the 4 weeks, April 1 to April 29, were 3,526,000 barrels and 3,280,000 barrels respectively. During that period total crude stocks increased 1,617,000 barrels, 361,000 barrels of which was in foreign stocks, leaving an increase of 1,256,000 barrels in domestic oils, or 45,000 barrels a day. Subtraction of this figure from the production leaves 3,481,000 barrels as the apparent daily demand for domestic crude during April, compared with the bureau's estimate of 3,434,000 barrels.

Domestic demand for motor fuel during June is estimated at 50,600,000 barrels, or 5 percent over the actual for June of last year, while exports are placed at 4,300,000 barrels, or about the same as a year ago.

"Stocks of finished and unfinished gasoline on March 31 were 87,121,000 barrels," the bureau reported. "According to statistics of the American Petroleum Institute, they declined only about 500,000 barrels during April, which would bring them to approximately 86,600,000 barrels as of April 30. The bureau estimates a decrease of 6,400,000 barrels in June."

On this basis, with benzol and direct sales of natural gasoline estimated at 1,100,000 barrels, refinery production for the month would be 47,400,000 barrels, to be allocated among the various districts as follows:

East Coast, 6,230,000 barrels; Appalachian, 1,700,000 barrels; Indiana-Illinois, 8,720,000 barrels; Oklahoma, 2,600,000 barrels; Kansas-Missouri, 2,330,000 barrels; Texas Inland, 3,390,000 barrels; Texas Gulf Coast, 12,450,000 barrels; Louisiana Gulf Coast, 1,420,000 barrels; North Louisiana-Arkansas, 940,000 barrels; Rocky Mountain, 1,260,000 barrels; California, 6,360,000 barrels.

Discussing the crude situation, the bureau estimated natural gasoline to be blended at the refineries as 6.1 percent of total gasoline production, or 2,890,000 barrels; and the yield of straight-run and cracked gasoline as 44.7 percent. Applied to the production of 44,510,000 barrels gives crude runs of 99,530,000 barrels, or 3,317,700 barrels daily, with foreign crude runs estimated at 2,400,000 barrels.

Exports of crude of 5,900,000 barrels, and fuel and losses of 1,700,000 barrels, leaves total demand for domestic crude in June as 104,730,000 barrels, or 3,491,000 barrels daily, distributed among the producing states as shown in the accompanying table.

Bureau of Mines Forecast of Domestic Crude Required by United States Refineries During June, 1939

(Barrels of 42 Gallons)

STATE	Forecast June, 1939	Forecast May, 1939	Actual Demand June, 1938
Texas	1,427,300	1,406,100	1,340,000
California	594,600	582,600	619,000
Oklahoma	450,300	455,800	553,000
Louisiana	265,000	261,600	234,000
Illinois	174,300	159,700	52,000
Kansas	152,400	152,600	152,000
New Mexico	117,000	115,500	106,000
Wyoming	73,300	64,200	69,000
Arkansas	54,700	52,900	54,000
Michigan	53,400	50,000	53,000
Pennsylvania	50,200	48,300	47,000
Montana	17,300	16,100	16,000
Kentucky	17,000	15,800	16,000
New York	14,900	15,100	14,000
Ohio	10,900	10,500	6,000
West Virginia	10,700	10,300	7,000
Colorado	5,000	5,200	4,000
Indiana	2,700	2,900	3,000
	3,491,000	3,425,200	3,345,000

Kansas purchasers want less oil

June demand for oil in Kansas is 169,961 barrels daily in the opinion of purchasers, whose figures went before the Kansas Corporation Commission at Topeka May 25. This compares with a May allowable of 170,350 barrels.

The hearing at Topeka also sought testimony as to demand for July and August.

It will be several days before the commission allocates the indicated demand among fields. When this is done the June allowable will be made as a fixed order, while allowables for July

and August will be tentative. The commission will continue the policy of hearing testimony from purchasers on a quarterly basis.

Future orders of the commission will reduce special allowables each month until these are eliminated.

No change expected in Oklahoma allowable

Canvass of purchasers of Oklahoma crude oil indicates that daily allowable for June will remain at 428,000 barrels, a figure that has been constant for nine months. W. J. Armstrong said May 25 that he would recommend this figure to the Oklahoma Corporation Commission, of which he is chief conservation officer.

An order to keep Oklahoma allowable at this figure will require changes in percentage output of several fields. Studies are being made in regard to Wilcox sand wells at Oklahoma City, where many are not capable of making allowables. In the Greater Seminole area, especially St. Louis, output is climbing.

Louisiana fixes June allowable at 263,023

Louisiana's oil allowable for June was set at 263,023 barrels by the Louisiana Conservation Commission.

South Louisiana was given an allowable of 198,795 barrels and North Louisiana was given 64,228 barrels. The Shreveport field was boosted to 7428 barrels on the basis of 37 present producers. Lisbon was cut 900 barrels from May's figure to 3100 barrels. Rodessa was left unchanged at 28,000 barrels and Cotton Valley was given 8200 barrels, 4200 barrels to the 14 Bodcaw (lower Marine) wells and 4000 barrels to the Holloway (Travis Peak) horizon. Remaining North Louisiana fields were given 17,500 barrels.

Michigan hearing called June 5

P. J. Hoffmaster, director of conservation and supervisor of wells in Michigan, has called a public hearing for June 5, for considering rules and regulations relative to drilling, producing and location of wells, as provided in the oil conservation act.

Tentative rules and regulations, meanwhile, are being drafted by Hoffmaster and the advisory board.

California allowable is 590,000 barrels daily

California operators, in their voluntary proration program, have agreed to hold the state's production within 590,000 barrels daily in June.

Arkansas allowable set at 57,641 barrels

Arkansas Oil & Gas Commission set the daily June and July allowable of Arkansas oil fields at 57,641 barrels, with a quota for controlled areas fixed

[*Continued on page 62*]

Oil at the Capitols

Congress hears conflicting views on marketing divorce . . . House opposes permanent Connally hot oil act . . . Five Illinois drilling bills.

Marketing divorce committee hears conflicting opinions

Legislation providing for the divorce of marketing operations from other branches of the oil industry last week was represented as the only effectual means of halting the major companies in their efforts to secure a monopoly on distribution and pictured by independent refiner-marketers as a revolutionary step which would bring chaos.

The conflicting views of the marketers and refiners were presented at hearings May 24 before a House Judiciary subcommittee headed by Representative Arthur D. Healey of Massachusetts. Other members of the subcommittee are Representatives Sam Hobbs of Alabama, David Satterfield of Virginia, Clarence Hancock of New York and Raymond S. Springer of Indiana.

Representative Vincent F. Harrington of Iowa, author of the bill, testified briefly as to its purposes, declaring that "the big oil companies have made a practice of reducing margins of profit to marketers to such a low point that many independent marketers have been driven out of the business or soon will be."

Meeting the expected charge of opponents that the bill is unconstitutional, Representative Harrington cited legislation divorcing the railroads from coal production and prohibiting packers from operating retail stores as precedents for his measure.

"The big profit is in producing, and in most cases marketing is carried on at a loss," he contended. "If the bill is passed the whole business of marketing oil will stand on its own economic base. The legislation will definitely help the independent oil marketer but will not harm the major companies except to turn their marketing operations loose and make them stand on their own legs."

The marketers' fight for the legislation was headed by Paul E. Hadlick, counsel for the National Oil Marketers' Association, who declared it essential as a means of stopping the growth of monopoly in the oil business.

"We are asking this legislation for our protection because the integrated companies have for many years, no doubt in an effort to gain control of marketing as they have production, transportation and refining, absorbed huge losses in marketing from the profits in other branches of the business," he explained.

"That such absorption of losses will end when control is obtained and the consumer made to pay for the acquisition is obvious from past history in

Michigan's Oil Conservation Advisory Board

Advisory Board under Michigan's oil conservation act. Board in organizing meeting this week named Harold M. McClure of Alma chairman and W. P. Clarke of Saginaw, vice chairman. Top Row, left to right: C. A. Smith, Jr., Smith Petroleum Company; E. F. Clagett, The Pure Oil Company; Russell Furbee, Gordon Oil Company; Kurt deCousser, Socony-Vacuum Oil Company. Bottom Row: W. P. Clarke, Gulf Refining Company; J. P. Hoqmaster, state director of conservation and supervisor of wells; Harold M. McClure, Rex Oil & Gas Company.

other branches of the industry. We are asking this legislation for the further reason that efforts to solve the problem in the oil industry have failed over the past six years of effort."

Independents' Advantage

The independent jobber, Hadlick declared, has "certain natural" advantages that enable him to operate more economically than the major companies can, but to remain in business must be assured a margin of profit which he charged they cannot now get. "The matter of a margin is a relative thing," he commented, "and it is not claimed that everyone in the industry is entitled to profit"; but, he added, "we do contend that it is unfair for the major oil companies to spend in marketing petroleum products far and beyond their income from that branch of the business, making up such marketing losses from their profitable operations in other branches of the industry."

The marketers' representative called attention to the four "aids to monopoly" granted by the government—the Connally act, the interstate oil compact, the import duty and the monthly forecasts of the Bureau of Mines, and pointed out that the government has moved against monopolistic practices in the industry in the two Madison cases and is now moving against them in California and Illinois. Another action, he said, should be brought in the East.

"Integrated oil companies have been operating their marketing outlets at a loss for a number of years," he continued. "This may be hard to understand but it is no doubt their desire to control the entire integrated function from the drilling of the well to the sale of the finished product to the consumer. Once the independent jobber is eliminated you can well imagine that absorption of marketing losses by major oil companies will cease."

None of the major companies now engaged in marketing could make money from those activities if they were separated from other operations, Hadlick asserted.

"We do not fear the competition of the major oil companies in marketing if such marketing was not subsidized from profits of the other branches of the industry," he concluded. "Because of the consistent policy over these many years in operating their marketing departments at a loss, the only way we can see out of our difficulty, and the only way to prevent complete monopoly of the oil industry, is the prompt passage of divorcement legislation.

"This legislation would place all in the marketing branch of the petroleum industry on the same footing competitively and make them all complete both in purchasing their refined supplies and in selling the same to the dealers and consumers. If control over oil is to be broken the breaking must start some place. The hardiness of the oil monopoly is not to be hindered by a few anti-trust suits."

Practices of the major oil companies under the so-called "Iowa plan" encourage price wars and are largely responsible for the difficulties of the independent jobbers, the subcommittee was told by A. C. Gienapp of Manchester, Iowa, secretary of the Iowa Independent Oil Jobbers Association.

The companies, which have leased their stations, are always pressing their operators to reduce prices to get volume, he said, and the independents are forced to take losses or lose business.

Answering questions by members of the subcommittee, Gienapp declared there is little difference between straight and third-grade gasoline and that much of the unbranded gasoline sold by the independents is as good as the majors' straight grades.

Integrated companies operating in South Carolina have repeatedly violated state and federal laws in their efforts to eliminate independent jobbers, it was charged by Fred W. Herhily of the Power Oil Company, Orangeburg, S. C., president of the South Carolina Oil Jobbers Association. Efforts to secure a state investigation of the situation have been unavailing, he said, because the American Petroleum Institute maintains a representative at the state capitol to stop adverse legislation.

Independent jobbers in South Carolina have found it impossible to secure independent sources of supply, he said, adding that the situation has become so serious that he is attempting to turn his business over to one of the major companies as a commission agency.

The Iowa plan, Herhily told the subcommittee, is "the most devilish, deadly instrument that a soulless corporation ever put out."

In Opposition

Opposition to the Harrington bill was presented by Henry Brown of the Operators Oil & Refining Company, North Long Beach, California, and William S. Scully, counsel for the Independent Refiners Association of California, heard out of turn because of the distance which they had traveled to testify.

Enactment of the bill, Brown declared, would require the independent refiner-marketers to disintegrate as well as the majors and under divorce the independents could not compete with the "unlimited capital" of the big companies.

"If any unfair practices exist, as alleged by the brokers and jobbers, then the proper procedure is to institute proceedings in the various states which have their acts of fair practices," he suggested.

Questioned by the subcommittee as to the effect of the legislation on retail prices, which proponents had claimed would be reduced, Brown asserted that costs to the consumer would be increased, because there would be a lot of middlemen engage in the business and all would seek what they considered a proper margin of profit. An increase of one cent in the margin, he said, would mean an additional $50,000,000 a year cost to the consumer.

"If war were to break out tomorrow, who do you think would be better qualified to distribute the necessary aviation gasoline to the airplanes, fuel oil to battleships and other naval vessels, and other petroleum products to the tanks, automobiles and other motors used?" he asked. "Would it be the jobbers and brokers or the present producers, refiners and marketers? The answer is obvious."

Characterizing the proposed legislation as "revolutionary," Scully contended its adoption would lead to chaotic results, of necessity bringing about an economic condition under which the independent refiner could not survive.

The legislation would probably be unconstitutional, he argued, since it would in effect be confiscation of facilities for the benefit of independent distributors.

Enactment of the measure would bring about a period of chaos from which the major companies would emerge unscathed while the independents in all branches of the industry would be eliminated, he predicted.

Further hearings on the bill will be held this week.

Committee proposes three-year Connally act extension

Extension of the Connally "hot" oil act for a period of three years was agreed upon May 24 by the House Interstate and Foreign Commerce subcommittee in charge of the measure, voting to report the extension bill to the full committee.

Action of the subcommittee in rejecting the Senate plan to make the legislation permanent was not unexpected, but it had been believed that the extension would be approved for two years, as was the case in 1937 when the bill was before the subcommittee under similar circumstances.

As a result of the recent decision of the Supreme Court holding that the penalty provisions of the original law had been extended together with other provisions, despite the failure of Congress so to stipulate, the subcommittee cut out of the bill a provision specifying that the criminal provisions should be continued.

Following the subcommittee meeting, Chairman William P. Cole explained that since the Texas legislature had extended the state conservation law for only two years, it was not deemed wise to make the Connally act permanent. However, he said, the three-year extension which is provided will keep the law effective until the state decides on the future of its own statute.

It is expected that the full committee will be able to take the bill up within the next ten days. No opposition to the substitution of a two-year extension for the provision for permanent status is expected to be offered in the Senate.

Special I.P.A. session at Dallas June 6

The attitude of the Independent Petroleum Association of America toward the federal legislation, now pending, by which pipe line systems would be divorced from other branches of the industry will be determined at a called session of the organization in Dallas, June 6. June 5 the committee of 36 will complete its report on questions submitted last October and submit the report to the membership June 6.

The committee of 36 was named following the annual meeting at Tulsa, in October, 1938, and undertook to make complete reports on the resolutions adopted by the association. These propositions were:

Pipe line divorcement.

Complete disintegration of all integrated companies.

Temporary prohibition of all imports of petroleum and its products.

Recommended total shut-down in all

oil-producing states having regulatory bodies.

An umpire to make allocations that are enforceable between oil-producing states.

All other questions submitted to them by the president or the executive committee.

The meeting of the committee was held December 13 in Fort Worth. Early in its study the committee decided that complete shut-down of oil fields was not practical and that legal provision did not exist. The matter of imports was passed on, the recommendation being that the stand of the association for tariff protection be adhered to. At the Fort Worth meeting the committee expressed itself against pipe line divorcement and against disintegration of integrated companies.

California confiscation gets adverse House report

By unanimous vote, the House judiciary subcommittee in charge of the Hobbs resolution to give the federal government control of the California off-shore oil fields on May 23 agreed to make an adverse report on the measure to the full committee.

If the full committee, which meets this week, stands back of its subcommittee, as members of the latter confidently anticipate, the measure will be killed, for the current session of Congress at least.

The Hobbs bill would instruct the Attorney General to test the title of the United States to the off-shore lands lying between low-water mark and the three-mile limit, with a view to securing possession of the California underwater oil fields as a naval reserve.

Application of the measure would be limited to the California situation, but it is admitted in all interested quarters that successful assertion of the federal claim would be followed by efforts of the government to secure control of other off-shore areas containing deposits of oil or other materials.

Similar to the Nye resolution, on which a Senate committee held hearings in March, the Hobbs measure was the subject of hearings before the subcommittee in the same month. In the Senate the legislation is still pending before the Public Lands Committee.

Omnibus tax bill passed by Texas

The Texas House of Representatives has passed an omnibus tax bill expected to raise some $17,000,000 for payment of old age pensions. The bill raises existing levies and was passed on the same day that the Senate passed a resolution asking the House to approve the constitutional amendment calling for a sales tax.

It is this tax bill which has caused a great deal of delay during the course of the current session.

Important to Oil

The bill is important to oil men because it raises taxes on crude oil and natural gasoline and provides for a graduated tax on crude oil based on the production from the individual well, a plan which was held constitutional a few days ago in a special opinion from the Texas attorney general, Gerald C. Mann.

The tax on natural gas is increased from three percent to four percent of value. On oil the tax is 2¼ cents on production from wells producing less than five barrels daily. On wells producing from five to 10 barrels daily, the production is taxed three cents. On wells producing 10 to 20 barrels daily, the tax is 3½ cents. On wells producing more than 20 barrels daily, the tax is four cents. When the price of oil exceeds $1.00, the tax rates are on a percentage basis, as provided in the law now.

There was relatively little opposition to the graduated tax in the House, especially since the levy on wells producing five barrels or less was no higher than the tax which is in effect now. However, the bill is expected to encounter much more opposition in the Senate.

Although operators of stripper wells cannot complain of higher taxes, as they have done in the past when the legislature sought to raise more revenue from oil, there is another problem which may prevent enactment of a crude tax. The bill, as passed by the House, provides that average production from the individual wells over a 30-day period determines the bracket in which a well is included. Thus, the comptroller must maintain observation on some 86,000 wells and be prepared with full information on the capacity of each well to produce.

The bill provides increased taxes on cigarettes, sulphur, inheritance, telephones, and other items.

Five Illinois oil bills are introduced

Five bills embodying recommendations of the Illinois legislature's special oil industry investigating committee were passed by the Senate last week in a move to provide a degree of control over drilling practices. Not one of the measures, however, provides for curtailment or proration of production, although the House committee on conservation of natural resources endorsed a bill to extend the state's membership in the Interstate Compact until September, 1941.

While holding membership in the compact for several years, Illinois has been without legislation to control production and it at present appears unlikely that any will be passed during the current legislative session.

Regulates Drilling Practices

Bills passed by the Senate, which go to the House for concurrence, would require persons engaged in drilling for oil or gas, or in core drilling, to file monthly a complete daily log of such drilling operations which is to be open to inspection by land and royalty owners; would regulate the sale price by producer of lessor's and royalty owners' share of oil and gas; would provide that in the event any oil and gas is discovered in paying quantities on a leasehold of more than 1 acre, the producer shall commence and pursue with reasonable diligence the drilling of another well upon each additional 10-acre tract covered by the lease; would require bond or insurance for payment of surface damages and also public liability and property damage insurance policy or bond for protection against injury or death to persons as a result of operations; would require drilling of offset wells by holders of adjoining property on which a successful well had been brought in; would require monthly reports to be filed with the state department of mines and minerals showing the amount of oil and gas sold from each well, together with the names and addresses of the purchasers of such oil and the prices at which such oil was sold to such purchasers; and would require owners of leases on producing property, when an offset well or wells within 660 feet of the boundaries are producing more oil or gas than the well or wells on such leased premises, to pay owner of royalty interests in wells on such leased premises an amount equal to the difference between the amount received from the sale of oil and gas produced on such leased premises and the amount received from the sale of oil and gas produced by any such offset well or wells.

Following an attorney general's opinion that the measure was unconstitutional, Representative Leo D. Crowley, Republican of Peoria, announced his bill seeking a state tax of $1 an acre on oil and gas leaseholds would be stricken from the calendar. It had been introduced to raise an estimated $10,000,000 annually for old age pensions.

After adopting an amendment setting the effective date at January 1, 1940, the House committee on conservation of natural resources approved a house bill to require meters on pipe lines leading from oil and gas wells. Also approved by the committee was a bill providing for filing of drilling logs with the state geological survey.

Killed by the House committee were bills providing for material and labor liens against oil and pipe line operators, and for detailed drilling regulations to be administered by the Illinois Commerce Commission.

Texan wants President to approve price fixing

A resolution has been introduced into the Texas legislature by Representative Henry Hull of Fort Worth asking for presidential indorsement of price fixing on crude and refined products produced in Texas. The resolution was referred to the House Committee on Oil, Gas and Mining, and it is unlikely that it will be taken up at this session.

Hull explained that the plan he offered was advocated by a Fort Worth oil man who complained that large quantities of oil were being sold in Texas below the market price, and that this oil was produced in Louisiana and Oklahoma. The resolution in full is set out below:

"Whereas, the annual value of the oil industry in Texas exceeds the total annual value of its agricultural products and deeply affects the welfare of our entire people; and

"Whereas, the sale of petroleum products below cost, frequently occur-

ring from unjustified price wars, causes economic insecurity, loss of employment and detriment to all concerned; and

"Whereas, at this time grave fears are entertained as to the stability of the oil industry itself through lack of assurance of a fair return on invested capital;

"Now, therefore, be it resolved by the Legislature of the State of Texas, in session assembled, that the Honorable Franklin D. Roosevelt, president of the United States, be, and is hereby most respectfully petitioned to approve fair and reasonable price agreements of the oil industry, among the various states, affecting the price of crude and refined products."

Wayne County may limit taxes to producing leases

Indication that Wayne County, Illinois, may follow the lead of Marion and Fayette counties in limiting tax assessments to producing oil properties ws given last week during a meeting in Fairfield at which township tax assessors met with Professor Simeon Leland, chairman of the state tax commission.

The state official told township tax officials that assessing non-producing leases and royalties would be impractical as there is no known way of fixing the valuation of such leases. A non-producing lease with oil under it would be worth many thousands of dollars, while it would be without value if it was without oil. Until a lease is drilled, there is no fair way of knowing what would be a fair assessment on it, he explained.

Pennsylvania Republicans would kill investigation

The Pennsylvania senate last week passed and sent to the house a Republican bill abolishing the Democratic-established oil industry investigation commission which recently issued a preliminary report favoring federal control of the industry. A final report is yet to be issued.

Administration leaders have indicated that no legislation would be enacted in line with any recommendations the commission may make, nor would approval be given at this session of a conservation program introduced at the request of the Central Pennsylvania Oil Producers Association.

Land owner, not producer, must pay county taxes

The Pennsylvania supreme court last week refused an appeal from a Venango County tax assessment placed upon oil production from a 100-acre tract owned by W. L. Baird in Irwin Township. The action arose on the contention that the local tax should be paid by the lessee, rather than the owner of the land.

The high court, in refusing the appeal, upheld the decision of Judge Lee A. McCracken at Franklin, who ruled the assessment was properly made against the owner of the property.

Anti-Trust Activities

Wisconsin jobber bases damage suit against nine concerns on Madison case . . . Columbia charges government has acted unfairly in Panhandle case.

Nine companies sued on price fixing allegation

Allegations of conspiracy to fix prices identical to those which formed the basis of the anti-trust indictments returned 3 years ago at Madison, Wisconsin, are the basis of a suit for $250,000 brought against 9 oil companies by a Wisconsin petroleum jobber in federal court at Minneapolis last week.

The action was brought by C. B. Abraham, head of the Wolf River Oil Company, of Fremont, Wisconsin, who charged that the defendant companies conspired to fix prices between 1931 and 1936 and that their action decreased his margin for handling gasoline by two cents a gallon. He claimed a total loss on gasoline sales of $33,973, damages to his good will and business in the amount of $50,000, and asked triple damages under the Clayton act.

Quotations in a Chicago trade journal upon which tank car prices were based "merely reflected the prices fixed by the unlawful acts of the defendants," Ernest Michel, attorney for Abraham, told the court.

Companies named as defendants were Shell Petroleum Corporation, Standard Oil Company of Indiana, Pure Oil Company, Sinclair Refining Company, Phillips Petroleum Company, Socony-Vacuum Oil Company, Skelly Oil Company, Cities Service Oil Company and Continental Oil Company.

District Judge Gunnar H. Nordbye, taking the case under advisement, instructed attorneys for both sides to file additional briefs within a week.

Would force gas company to dispose of line holdings

Columbia Gas & Electric Company last week announced that it has invested more than $10,000,000 "in reliance on the integrity" of a 1936 consent decree which the Department of Justice seeks to have set aside by an action brought May 15 in Federal District Court at Wilmington, Delaware. The government seeks to file an amended bill in an anti-trust suit in a move to force the company to divest itself of its holdings in Panhandle Eastern Pipe Line Company. District Judge John P. Nields set June 12 for argument on the motion.

"The consent decree referred to in the government's statement was entered into in 1936 between the government and Columbia Gas & Electric Corporation and Columbia Oil & Gasoline Corporation in order to terminate the litigation which the government had instituted," the company said in a statement. "One of the stipulations signed by both the government and the companies which accompanied the decree recognized that the companies denied any breach of the anti-trust laws.

Okayed by Decree

"The decree specifically provided that Columbia oil could retain without limit of time stock of Panhandle Eastern Pipe Line Company, which the government now seeks to have it sell.

"In reliance on this provision and other provisions of the decree and acting with the full knowledge and consent of the trustee appointed by the court, Columbia Gas & Electric Corporation has advanced more than $10,000,000 to build pipe lines through which natural gas from Panhandle Eastern Pipe Line has been and is now being supplied to the city of Detroit and many cities and towns in Indiana which have not had this service before.

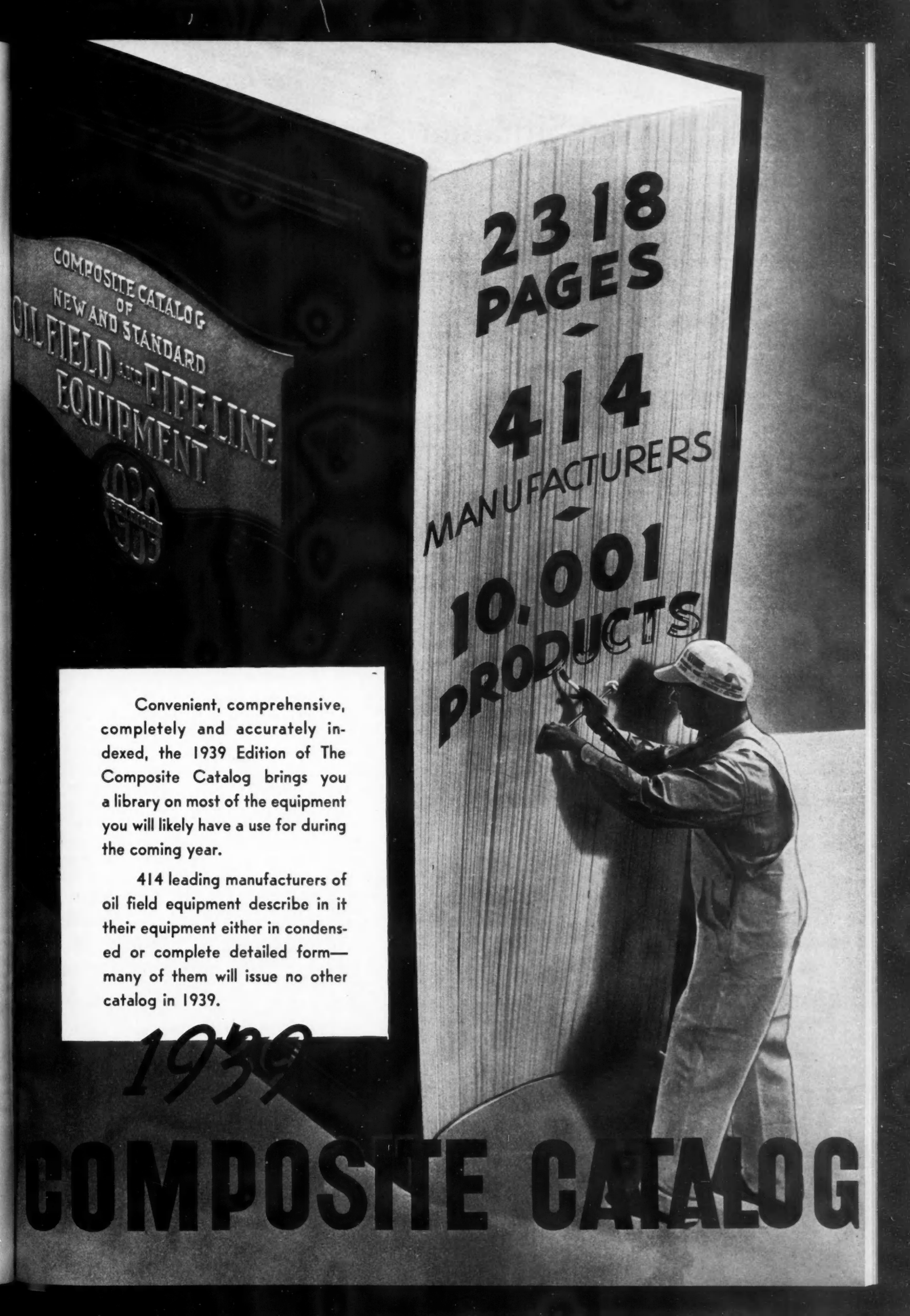
"This gas is supplied at rates which are subject to public regulation and the terms of all contracts between Panhandle Eastern Pipe Line Company and any subsidiaries of Columbia Gas & Electric Corporation or Columbia Oil & Gasoline Corporation have been approved by the trustee under the decree.

Submitted Proposal

"Both Columbia Gas & Electric Corporation and Columbia Oil & Gasoline Corporation have acted in full reliance on the integrity of the consent decree and have complied with every stipulation thereof. Nevertheless, they have for some time been trying to find a way to meet the present desire of the government to terminate the decree. To this end, last October a written proposal to obtain the complete disposal by Columbia oil of its stock in Panhandle Eastern was submitted.

"Furthermore, beginning in December, 1938, both companies have had many discussions with the department developing a plan for effective severance of the indirect investment link between Columbia Gas and Panhandle Eastern without the disposal of Columbia oil's stock in Panhandle Eastern, culminating in the submission of another plan to this end last week. Neither plan has been acceptable to the government.

"Now, after having induced Columbia Gas & Electric Corporation to spend this great amount of money in reliance on the provisions of the decree, the government asks to have the decree set aside and the litigation resumed."



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1939

COMPOSITE CATALOG

Market Situation

Additional gains in gasoline prices are feature of week . . . Gasoline storage reduced slightly although crude runs to stills reach a new peak.

Gasoline strength causes continued firm markets

The markets continue generally firm, in the wake of the repeated advances of gasoline prices at the refineries in the past two months.

The higher tank car prices of gasoline finally have resulted in substantial advances also in dealer tank wagon and retail prices.

The general improvement of the gasoline market has given support, meanwhile, to the crude oil markets, which previously appeared in some danger of further subsiding.

Along with the advances of gasoline prices, moreover, there have been increases also in kerosene and tractor fuel prices to dealers and to the consumers.

The markets have had the advantage of remarkably good demand for petroleum products, which has made it possible for the industry to maintain a fairly satisfactory inventory position, despite a tendency to overproduce crude oil and to process more crude than desirable at the refineries.

For June a continuation of comparatively good demand for petroleum products is anticipated, and a fairly satisfactory balancing of supply with demand is in prospect, as most of the important producing states which have proration propose to continue moderate allowables.

Figures reflect high rates of operation

The latest weekly petroleum statistics, covering the week ended May 20, showed a moderate increase in crude oil production, a new all time peak of refinery runs, slightly smaller gasoline production, a moderate withdrawal of gasoline from storage, substantial additions to stocks of both light and heavy fuel oils, and a material increase in imports of petroleum. Crude oil stocks were reduced in the week ended May 13, latest period for which figures were available late last week.

Production and Runs

United States crude oil production rose to 3,438,400 barrels daily in the week ended May 20, from 3,402,500 barrels the previous week. The new rate was 8.3 percent above that in the corresponding week last year.

Crude runs to refinery stills jumped 60,000 barrels to a daily average of 3,460,000 barrels, a new all time peak. That rate was 7.3 percent higher than for the comparable week last year.

Gasoline production figures for the week did not fully reflect the higher runs, having declined slightly to 11,139,000 barrels from 11,172,000 barrels the week before.

That output of gasoline was sufficiently moderate to permit a withdrawal of over 500,000 barrels from gasoline storage, which was reduced to 84,294,000 barrels. That amount was 4.4 percent smaller than the supply held a year previously.

Fuel Oils

Stocks of gas oil and distillate fuels, used principally for house heating, are being gradually built up in preparation for fall and winter demand. They were increased about 400,000 barrels in the week of May 20, having been expanded to 26,389,000 barrels. These stocks are apparently around 1,500,000 barrels smaller than a year ago, but a comparable figure for last year is not available.

Stocks of residual fuel oils, used for industrial operations, were increased about 900,000 barrels in the week ended May 20, to a total of 109,405,000 barrels. These stocks are around 2,000,000 barrels lower than a year ago, although complete statistics for this time last year are not available.

Imports Larger

For the week ended May 20, imports of petroleum for domestic use and receipts in bond at principal United States ports totaled 1,495,000 barrels (1,039,000 of crude oil and 456,000 of fuel oil), a daily average of 213,571 barrels, compared with a daily average of 144,143 barrels for the week ended May 13 and 207,821 barrels daily for the four weeks ended May 20. These figures include all oil imported, whether bonded or for domestic use, but it is impossible to make the separation in weekly statistics.

All the above statistics are from the latest weekly report of the American Petroleum Institute.

Crude Stocks Reduced

The Bureau of Mines reported that crude oil stocks were reduced 868,000 barrels in the week ended May 13, to 277,739,000 barrels. That amount was 8.7 percent smaller than the storage one year previously. The stocks of domestic oil were reduced 975,000 barrels, but stocks of foreign oil were increased 107,000 barrels.

Since April 1 stocks in the United States have increased 1,620,000 barrels, important additions having included those of approximately 1,000,000 barrels in Illinois-Southwest Indiana, 500-

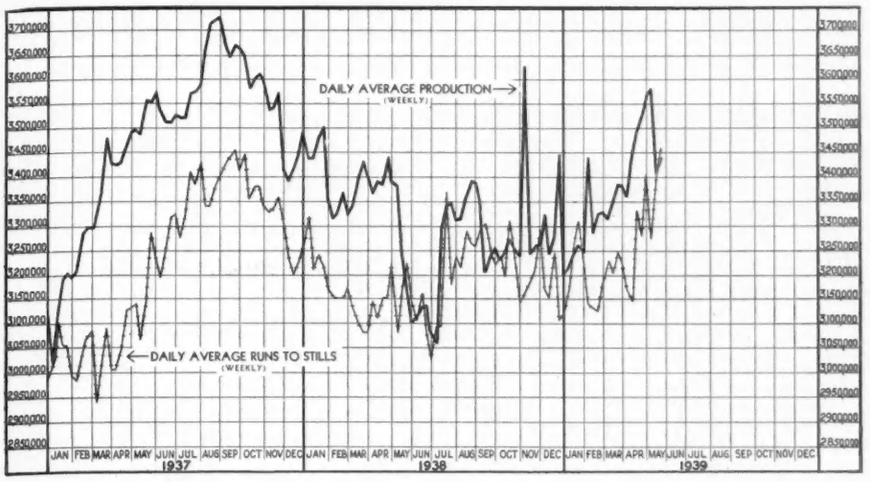
Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
August 28, 1937	**3,731,450	3,425,000	309,506,000	66,997,000	112,111,000	
September 25, 1937	3,666,300	°3,455,000	307,974,000	65,620,000	116,472,000	
March 19, 1938	3,433,550	3,080,000	306,380,000	**93,192,000	122,067,000	
April 30	3,396,150	3,215,000	307,147,000	91,339,000	21,480,000	106,790,000
May 28	3,098,650	3,150,000	301,583,000	87,946,000	23,619,000	110,696,000
June 25	3,083,900	3,025,000	293,463,000	82,412,000	25,343,000	112,458,000
July 30	3,316,400	3,240,000	288,514,000	76,864,000	27,573,000	116,721,000
August 27	3,388,500	3,255,000	285,029,000	71,754,000	29,747,000	117,179,000
September 24	3,251,150	3,220,000	280,278,000	68,605,000	31,183,000	119,285,000
October 29	3,237,500	3,145,000	275,824,000	67,590,000	33,690,000	120,029,000
November 12	3,243,250	3,180,000	273,394,000	67,551,000	34,175,000	120,491,000
November 26	3,260,900	3,295,000	270,563,000	68,628,000	33,749,000	119,885,000
December 10	3,245,100	3,150,000	§269,509,000	68,587,000	32,068,000	118,711,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	29,082,000	115,741,000
January 28, 1939	3,248,250	3,235,000	271,763,000	77,279,000	26,583,000	112,766,000
February 25	3,328,850	3,185,000	271,758,000	84,597,000	23,419,000	110,252,000
March 4	3,314,850	3,230,000	272,971,000	85,379,000	22,449,000	109,481,000
March 25	3,382,350	3,225,000	273,915,000	87,561,000	21,487,000	107,551,000
April 22	3,526,700	3,280,000	277,156,000	*87,769,000	21,058,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	†25,844,000	†108,409,000
May 6	*3,580,900	3,275,000	*278,607,000	86,216,000	26,167,000	108,597,000
May 13	3,402,500	3,400,000	277,739,000	84,808,000	25,993,000	108,513,000
May 20, 1939	3,438,400	**3,460,000	.....	84,294,000	26,389,000	109,405,000
May 21, 1938	3,175,750	3,225,000	‡304,198,000	87,992,000	†23,211,000	†108,902,000
Change in past year	+8.3%	+7.3%	—8.7%	—4.4%	+13.4%	+.5%

** All time peak. * Peak for 1939. § Lowest for 17 years. ‡ Stocks, May 14, 1938.
† Prior to week ended April 29, 1939, figures did not include stocks at terminals, in transit, etc., except in California. Such stocks, outside California, included for first time in week of April 29, 1939, consisted of 4,772,000 barrels of gas oil and distillates and 2,769,000 barrels of residual fuel oil.
° Peak prior to 1939.

United States Crude Oil Production and Refinery Runs



000 barrels of California light oils, 300,000 barrels in North Louisiana, 600,000 barrels in East Texas, 900,000 barrels in foreign crude, and smaller gains for Pennsylvania, Michigan, New Mexico, the Texas Gulf Coast, Kansas, and Oklahoma. Partially offsetting those increases were withdrawals from storage between April 1 and May 13 that included about 1,500,000 barrels in West Texas, 300,000 barrels in the Rocky Mountain states, and smaller reductions in South Louisiana, and several Texas districts. Texas as a whole showed a decline of about 1,000,000 barrels in crude stocks since April 1.

Refined product prices make further gains

Prices of petroleum products showed some additional improvement during the past week. Gasoline tank car prices were further raised in instances where the previous advances had not yet been extended, some additional increases having been applied in the Middle Western and East Texas markets.

Dealer tank wagon and retail prices have been advanced by now throughout the Middle West, following increases posted a week ago by Standard Oil Company of Indiana.

Dealer prices of kerosene and tractor fuel in the Middle West also have been advanced, having been raised to normal where they previously were sub-normal.

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below, 4⅛ to 4⅜ cents a gallon; 63 to 66 octane, 4⅜ to 4⅝ cents; 67 to 69 octane, 4⅝ to 4⅞ cents; 70 to 72 octane, 4⅞ to 5⅛ cents.

Corresponding prices in the Chicago market were: 4 to 4⅜ cents, 4⅛ to 4½ cents, 4¼ to 4¾ cents, and 4½ to 5⅛ cents.

In East Texas, 60-62, 400 end point gasoline was priced generally at 4¼ cents a gallon.

Natural gasoline, grade 26-70, was selling in the Mid-Continent markets, f.o.b. refineries, at 2½ cents a gallon, and sales were reported at the same price f.o.b. Breckenridge, Texas.

Kerosene prices f.o.b. Oklahoma refineries ranged from 3⅞ to 4¼ cents a gallon for the 41-43 water white grade, and from 4 to 4⅝ cents for the 42-44 water white grade; and corresponding prices in the Chicago market were 3½ to 4⅛ cents and 3⅝ to 4⅜ cents.

Prices of fuel oils were generally unchanged last week. In the Chicago market range oil was priced from 3¼ to 4 cents a gallon. The No. 1 white oil was priced from 3¼ to 3⅞ cents, and No. 1 straw from 3¼ to 3½ cents. No. 2 straw was 3⅛ to 3½ cents. No. 3 oil was 2⅞ to 3⅛ cents. No. 5 oils were 57½ to 70 cents a barrel. The No. 6 oil was quoted at 35 to 45 cents.

LETTERS

"Page" the economist

Compilation of statistics for the first quarter of 1939 as compared to the first quarter of 1938 is as follows:

Comparison of First Quarter of 1939 and 1938

	Percentage Increase or Decrease over 1938 (Percent)
Demand—	
All oils	+ 5.9
Crude oil	— 0.7
Motor fuel	+ 5.8
Gas oil and distillate	+15.4
Residual fuel	+ 9.5
Lubricants	+ 4.9
Exports—All oils	— 5.3
Crude Production	— 1.5
Imports—All oils	—14.8
Runs to stills	+ 1.5
Well completions	—14.0
Stocks on March 31—	
All oils	— 5.8
Crude oil	—10.7
Motor fuel	— 5.1
Gas oil and distillate	+ 6.5
Residual fuel	+ 2.5
Average Prices—	
Crude oil, 36 gr. Okla.-Kans.	—13.6
Gasoline service station, ex. tax	— 7.9
Gasoline, tank car, Group 3	— 9.7
Fuel oil, No. 1, Group 3	—11.8
Fuel oil, No. 6, Group 3	—28.5

What has become of the oft repeated phrase that supply and demand govern prices?

W. Scott Heywood,
Oil Operator

Jennings, Louisiana

An economist might go exhaustively into the present relationship of supply, demand, and prices of oil without finding a satisfactory explanation of the current situation, in which prices are lower than a year ago in the face of smaller inventories.

But a crude oil broker would not be stumped.

He would point out the fact that substantial quantities of crude are being sold for less than the established market prices in Illinois and some other areas; and that low priced crude is converted into low priced gasoline.

No better evidence could be found that the supply of oil actually is exceeding firm demand.

Regardless of what demand and supply were a year ago, they are not in balance today. The industry is NOT achieving the effective balancing of supply with demand that is needed to assure firm markets.

Furthermore, the crude oil broker, realizing that Illinois production may go to 275,000 barrels daily by the end of the summer, in the almost certain absence of state proration, might add that even present prices of oil are not safe.

Federal taxes running ahead of last year

Federal tax collections from gasoline and lubricating oils in April were somewhat above those of March but, together with revenues from pipe line transportation, were under the figures for April of last year, it was reported by the Internal Revenue Bureau.

April collections from the gasoline tax totaled $15,182,328, compared with $14,577,873 in the preceding month and $16,436,554 in the corresponding month a year ago, it was reported.

Collections from lubricating oils were $2,190,594, compared with $2,169,637 in March and $2,456,641 in April, 1938, and receipts from pipe line transportation were $734,658 against $968,041 in March and $890,752 last April.

Bureau figures showed that for the first four months of the calendar year gasoline tax collections reached $62,617,157, against $60,728,441 last year and oil tax collections were $8,688,719 against $8,259,680. Collections from transportation, however, were under last year, $3,587,820 against $4,207,878.

Pipe Line News

K-M-A field's new outlet getting pressure tests

Pressure tests were under way last mid-week on Sinclair Refining Company's pipe line division's 66.4-mile, 6-inch outlet for the K-M-A field, North Texas. Welding crews tied in the last section on May 23, and ditch back-filling will be completed by June 1 to permit the carrier to begin pumping oil on schedule. It extends southeast across Archer County to Hensley Junction, south central Jack County, where connection is made with the company's Ranger-Oklahoma system and also with a looped carrier that will permit oil shipments via Mexia to Houston.

Construction work on the K-M-A-Hensley unit began April 17, with the contracting firm using two gangs. Considerable rock was encountered in fol-

lowing a direct route. The right-of-way was checked for soil "hot spots" before and after ditching. Approximately 7 miles of the line was given protective insulation. The carrier will have a rated capacity of 8000 barrels daily, using the K-M-A station, and can be stepped up to 10,000 barrels daily by tieing in and adding an extra unit to the company's Predo field booster station in southeast corner of Archer County.

Sinclair Prairie Oil Marketing Company is expanding crude nominations for the K-M-A field from 2000 barrels to 6000 barrels daily, based on full month schedule. The increase will be attained by serving unconnected wells and relieving other buyers of a substantial quota of wells by mutual aggreement.

Socony-Vacuum to build eastern products line

Socony-Vacuum Oil Company, Inc., is planning to build a pipe line for the transfer of the company's products between Springfield, Massachusetts, and Hartford, Connecticut.

The plans call for a 6-inch welded steel pipe line. It is proposed that construction work, for which local employees will be engaged wherever possible, should begin in the fall and should be completed before the end of the year.

Crude Production

Gain of 170,050 barrels in daily average throws output 184,325 barrels over bureau estimate

OUTPUT of United States oil fields averaged 3,609,525 barrels daily during the week ended May 27. Return of the 6-day production week in Texas swelled the national total 170,050 barrels over that for the week preceding. Production at this level was 184,325 barrels over the estimate of demand for domestic crude made by the Bureau of Mines.

Texas produced 1,496,250 barrels daily to surpass the previous week's total by 217,250 barrels. Production at this rate, which will be maintained through next week, was 90,150 barrels over the bureau forecast.

California yield slumped to 610,000 barrels daily, down 15,500 barrels from the week prior, but still riding high above Producer's Committee and federal recommendations by 34,500 and 27,400 barrels, respectively.

Oklahoma yield was pegged at 449,725 barrels daily, a dip of 23,525 barrels from the previous week's level. State allocation was over-run by 21,725 barrels although production was 6075 barrels below the bureau.

Illinois registered a smaller increase than usual (2150 barrels) in advancing to 215,550 barrels daily. Bureau prognosis was left 55,850 barrels behind as the state continued its weekly establishment of all-time highs.

Kansas was the third major sector to show a decrease over the week prior. Production at 161,750 barrels daily was 13,800 barrels below the mark of the week before and midway between state allocation, which was 8600 barrels over output, and federal estimate, which was 8150 barrels under production.

New Coleman field opened

Coleman, Texas.—Coleman County gained a new oil pool when Anzac Oil Corporation's Morris 4-C, near center of north half of David Breeing Survey, five miles northwest of Echo, flowed an average of 70 barrels of oil per hour for 5 hours through casing after nitro shot in sand at 2174-2190 feet. On later gauge through tubing the well is credited with having flowed 226 barrels of oil in 2½ hours to become the largest well completed in the county in recent years. A 2695-foot failure situated half a mile to the west of the new strike logged oil and gas shows.

United States Crude Oil Production

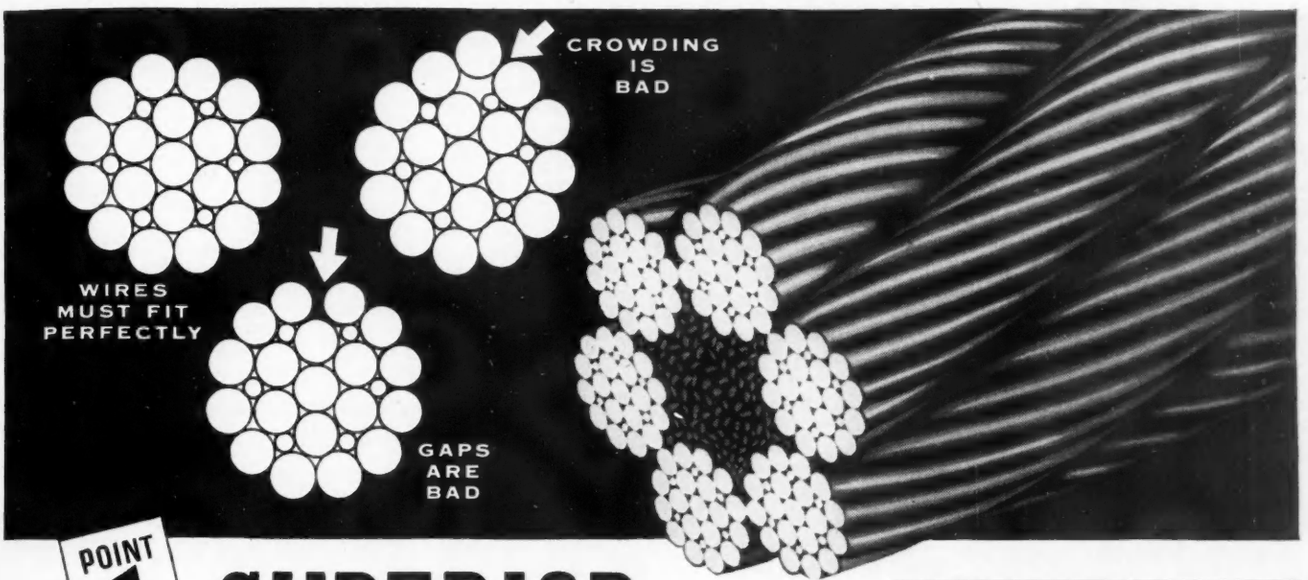
Estimates Compiled by THE OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (May)	State Allowable in May	BARRELS DAILY FOR WEEK ENDED May 27	BARRELS DAILY FOR WEEK ENDED May 20
TEXAS—				
Texas Panhandle			87,550	66,250
North Texas			84,850	81,450
West Central Texas			31,300	30,750
West Texas			235,650	199,550
East Central Texas			106,200	90,050
East Texas Field			446,950	375,450
South Texas			256,200	230,350
Texas Gulf Coast			247,550	205,150
Total Texas	1,406,100	1,393,077*	1,496,250	1,279,000
CALIFORNIA—				
Long Beach			48,700	48,028
Santa Fe Springs			27,500	28,302
Huntington Beach			27,800	31,589
Dominguez			22,000	21,117
Ventura Avenue			34,300	33,232
Midway-Sunset			54,300	58,665
Kettleman Hills			52,400	51,931
Wilmington			90,100	90,361
Others			252,900	262,275
Total California	582,600	575,500‡	610,000	625,500
OKLAHOMA—				
Oklahoma City			99,650	107,400
Seminole Area			104,425	112,025
Fitts			26,700	27,025
Others			218,950	226,800
Total Oklahoma	455,800	428,000	449,725	473,250†
LOUISIANA—				
North Louisiana		62,629	72,850	73,325
South Louisiana		201,005	195,250	194,000
Total Louisiana	261,600	263,634	268,100	267,325

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (May)	State Allowable in May	BARRELS DAILY FOR WEEK ENDED May 27	BARRELS DAILY FOR WEEK ENDED May 20
ILLINOIS—				
Salem			113,500	111,700
Loudon			46,000	44,900
Other New Pools			47,300	48,500
Old Pools			8,750	8,300
Total Illinois	159,700		215,550	213,400
KANSAS—				
Burrton-Haven			10,100	10,275
Russell County			22,050	22,850
Silica			11,200	9,975
Others			118,400	132,450
Total Kansas	152,600	170,350	161,750	175,550
NEW MEXICO	115,500	117,100	111,050	111,550
EASTERN STATES—				
Pennsylvania Grade			76,800	76,750
Others, Eastern			5,550	5,500
Total Eastern States			82,350	82,250
MOUNTAIN STATES—				
Wyoming	64,200		60,550	58,150
Montana	16,100		14,650	14,300
Colorado	5,200		3,600	3,550
Total Mountain States	85,500		78,800	76,000
MICHIGAN	50,000		63,950	63,550
ARKANSAS	52,900	54,672	55,100	55,200
KENTUCKY	15,800		14,500	14,500
INDIANA	2,900		2,400	2,400
Total United States	3,425,200		3,609,525	3,439,475

* Daily average, considering 2 Saturday and 4 Sunday shutdowns, water exemptions, and total exemption at Rodessa.
‡ Recommendation of Central Committee of California Oil Producers. † Revised.

QUALITY wire rope



POINT 1

SUPERIOR *DESIGNING*

The designing of wire rope is by no means a simple matter—but on the contrary involves mathematical computations of a most complex and difficult type. There are upward of 80 different constructions of wire rope in use, and each is available in all sizes for which it is recommended. Wire diameters must be computed with absolute accuracy for every size in every construction. If computations are not accurate, and if wires are not of the diameters specified—the wires in the strands will not group together accurately, to give a snug, firm strand. On the contrary, there will be unfilled gaps between wires—or wires will be crowded out of correct position. Either of these conditions will produce an imperfect and short-lived rope.

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May we place you on our mailing list for our informative bulletin, "ROPE DOPE?"

"The Sherman Act—a Frozen Asset"—Hodges' subject

A further statement concerning the policy of the department of justice with regard to anti-trust law enforcement was made last week by Edward P. Hodges, special assistant United States attorney general, before a business group in Richmond, Virginia. His topic was "The Sherman Act—a Frozen Asset," and he implied that forceful enforcement would mark a new government policy.

"The results of 50 years of non-enforcement are now quite apparent," he said. "I do not suggest that failure to enforce the anti-trust laws is a complete explanation of our present economic condition. However, I submit that a review of theory and fact give a sound basis for the view that if the anti-trust laws had been vigorously enforced our markets would be more stable, production larger, employment greater and prices lower.

"The long range effect of any enforcement policy is of first importance," he added. "Therefore, we are not required to attack combinations which go no further than to promote efficient mass production and orderly marketing conditions. No government group so contends. Furthermore, we are no more interested in keeping an uneconomic operation going than we are in permitting an outmoded process to be continually thrust upon the public by illegal means. Competition justifies itself under our economic system as long as it promotes the public welfare. We are interested in results from competition and we try to be alert to results from illegal combinations.

"In undertaking a vigorous enforcement policy after years of spasmodic activity, the attorney general has deemed it advisable to issue public statements so as to inform businessmen and the public generally with respect to the basis for the action the department is taking in a particular situation. Thus the public may determine whether the department is following a course which will fullfil its duty to its client.

"In order to render more effective service, the anti-trust division is planning to set up five regional offices. In this way we can gain a better understanding of the problems of the businessman affected by anti trust violations and also probably correct many situations without having to go into court.

"I may state that vigorous enforcement of the anti-trust laws presents no hazard to legitimate trade association activity," Hodges said. "In meetings, much can be done to promote a sympathetic understanding with respect to common problems so as to lead to cooperative endeavor. As you know, such cooperative endeavor should not embrace price fixing, curtailment of production and allocation of territory. However, the value of an association is by no means diminished because you cannot indulge in such practices. There are innumerable enterprises in which a trade association may engage for the benefit of its members and their customers, as well as the public. Representatives of the department are not permitted to express opinions as to what can be done under the anti-trust laws. Nevertheless, some activities may be mentioned which it is obvious do not basically offend the anti-trust laws and which under ordinary circumstnaces may be engaged in with safety."

Allowable situation

[*Continued on page 53*]

at 32,641 barrels and settled field, 25,000 barrels.

Daily allowables of controlled fields were set as follows: Atlanta, 400 barrels; Buckner, 2100 barrels; Magnolia, 8696 barrels; Miller County, 3300 barrels; Schuler, Jones sand, 14,804 barrels; Schuler, Reynolds lime, 2400 barrels and Village, 941 barrels.

At its hearing Thursday, the commission announced that the new allowables would be set as the basic allowables for a period of 60 days, adopting the policy of holding hearings each 60 days in the future instead of monthly.

It was also decided that in the future bottom hole pressures and gas/oil ratios surveys would be made only each 60 days with the exception of the Magnolia field, where the surveys will continue each 30 days.

The commission ruled that there would be no more back allowables permitted in any field in the state. Under production which has occurred due to lack of pipe line facilities will be allowed to be made up, however.

Panhandle sour gas allowable is fixed

Sour gas allowables for the Texas Panhandle were fixed at 690,000,000 cubic feet daily for the quarter beginning June 1. The policy of establishing allowables for longer periods was inaugurated by the Railroad Commission this year when operators reported that they had difficulty in producing the exact amount of gas allowed within a 30 day period. They requested the longer orders so that if production exceeded allowables during one 30 day period, it might be made up during the succeeding 30 days.

International exposition re-elects all officers

Plans for a building to house exhibits from foreign countries were discussed and officers were re-elected at the annual meeting of International Petroleum Exposition directors at Tulsa on May 23. W. G. Skelly is president; Alf G. Heggem and Frank J. Hinderliter, vice presidents; Clyde H. Pape, treasurer; W. B. Way, general manager; H. R. Powers, secretary, and Frank O. Prior and W. M. Bovaird, executive committee.

Way reported that with the addition of $140,000 in capital investments in the new exhibit building and facilities at the last show, that the exposition plant is of ample size to provide inside exhibit space in 1940, but that additional outside space may be required to take care of a number of companies who have expressed the desire to construct buildings of their own. Dates for the exposition are May 18-25, 1940.

Way recommended to the directors that an international building be erected and companies be invited to exhibit relief maps of their oil development. The building would also serve as headquarters for international delegates.

"Over 60 percent of last year's exhibitors have already notified the exposition that they want the same amount or additional space for the 1940 show, president Skelly told the directors.

Dr. C. K. Francis, co-chairman with Dr. Gustave Egloff of the scientific and technical committee reported that the committee had already been organized and has held one meeting.

Officers of the International Petroleum Exposition, re-elected at the annual meeting of the board May 23, shown inspecting a poster which will be used as a part of the publicity for building attendance in 1940. From left to right are: Wm. B. Way, general manager; Alf G. Heggem, vice president; H. R. Powers, secretary; W. G. Skelly, president; Frank O. Prior, executive committee; W. M. Bovaird, executive committee; and Frank J. Hinderliter, vice president.

WEEK'S DRILLING HIGHLIGHTS

Illinois

Six wildcats scattered among Franklin, White, Wabash and Wayne counties reported promising oil shows. Avena Township section of Eastern Fayette County pool got a 1¼-mile extension south. Tonti Township pool probably will complete its second well next week; it is showing for a producer.

Texas Gulf Coast

Collegeport prospect's drilling wildcat blew out at 3845 feet and may indicate a field for Matagorda County, another on the prison farm land in Brazoria County was listed flowing 25 barrels hourly from Vicksburg. The second well to top the pay in the new Aldine field, Harris County, got salt water. The second well on the north flank of Thompson, Fort Bend County, topped the new sand higher than the first. Two wildcats, one at Cheek, Jefferson County, and the other at Glen Flora, Wharton County, were running high.

West Texas

Structural position of a south central Gaines County wildcat indicates good chance of Permian lime production. Output of Bennett field's 2-mile northeast extension was only 110 barrels, 26 percent bs&w. An Ector County wildcat is running high.

New Mexico

An east outpost of Lovington is running low and an offset to the discovery well proved the water table within the pool is not constant. Chaves County's prospect deep lime strike developed water trouble upon reacidizing a saturated zone.

North Louisiana

Performance of a well indicates possibility of Lower Marine gas production in Lake Bisteneau field, Bienville Parish. Two outposts of the recently discovered shallow Vivian offshoot of Pine Island, Caddo Parish, were abandoned.

South Texas

In the Rio Grande Valley a new shallow Frio sand field was opened just north of the Ricaby field in Starr County, while another field was discovered two miles northeast of Rincon in the same county. A new field was being opened on the highly touted Robstown trend in Nueces County, as an extension well to the Clara Driscoll field promised to produce. A new Mirando sand field was opened in Webb County, and the Balcones Fault was getting a new pool in Bastrop County.

Indiana

A Luce Township wildcat in Spencer County cored 10 feet of saturation in the Waltersburg sand. In Posey County, a Black Township wildcat swabbed oil after being acidized, and apparently is small McClosky producer. In Marrs Township, Illiand Oil Company reported saturation in both the Waltersburg and Jett sands.

North Texas

An offset to Nocona pool's discovery well indicated it would make a producer in the established pay, but will continue and determine thickness of the Strawn. Eastern Young County offered a probable deep lime strike when a wildcat near Loving began filling with oil from broken Caddo. Walnut Bend strengthened its positions as one of the most productive Strawn areas in the district. Archer County's first Bend lime producer gauged 111 barrels of 43 gravity oil in 3 hours. A major extension for K-M-A appears probable.

California

Extending Rio Bravo northwest, a completion of the week proved a sharp dip of the structure in that direction. A 3000-barrel completion in new Arvin, third for the field, is expected to accelerate drilling. Two Kern County wildcats prepared to test formations below 12,000 feet.

Arkansas

Kerr-Lynn field continued to lead the state in activity with 3 completions and 6 locations. Wildcats on two Permian lime prospects, one in Union County and the other in Columbia County, failed to pick up saturation.

Comparison of Permits Granted for New Wells

STATE	Week Ending May 27	Total this Mo.	Total this Year	Total this Date Last Year	1938 Year Total
Arkansas	7	21	85	93	247
California	18	88	414	526	1,146
Louisiana	42	129	477	504	1,214
Kansas	47	162	568	674	1,453
Michigan	41	138	495	306	953
Oklahoma	46	199	846	885	1,978
Texas	172	835	4,400	5,962	12,369
Total	373	1,572	7,285	8,951	19,360

Summary of Wells Completed in the United States Week Ending May 27, 1939

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1939	Total This Date 1938
Alabama	....	....	....	....	....	1	2
Arkansas	5	5	....	....	3,018	87	99
California	21	18	....	3	16,586	436	501
Colorado	2	1	....	1	30	11	4
Florida	....	....	....	....	....	....	....
Illinois	104**	83**	....	21	30,580	1,489	383
Indiana	5	1	1	3	600	58	46
Kansas	21	16	1	4	17,996	494	753
Kentucky	16	5	4	7	320	252	285
Louisiana	24	14	....	10	4,779	405	423
Michigan	32	17	3	12	10,013	512	325
Mississippi	....	....	....	....	....	2	8
Montana	2	2	....	....	525	45	25
Nebraska	....	....	....	....	....	....	....
New Mexico	11	10	....	1	6,972	252	216
New York	7*	7*	....	....	23	191*	326*
Ohio	16	3	9	4	55	325	374
Oklahoma	58	39	5	14	9,815	831	899
Pennsylvania	25*	21*	....	4	26	502*	970*
Texas	164	121	5	38	53,674	3,973	5,476
Utah	....	....	....	....	....	....	....
West Virginia	5	1	3	1	5	196	312
Wyoming	5	4	....	1	3,004	58	41
Total this week	523	368	31	124	158,021	10,121†	1,1470‡
Total last week	516	333	37	146	184,584	9,598†	10,871‡
Total this year	10,121	6,913	702	2,506	9,687,602	....	....

* Includes water-input wells. ‡ Includes 2 Tennessee completions.
† Includes 1 Georgia completion. ** Includes 4 gas-input wells.

Illinois Developments

Six wildcats in four counties reported showing oil. Eastern Fayette pool receives mile extension south.

Olney, Ill.—Six wildcats scattered in four counties commanded Illinois oil interest last week after promising shows. Two of the counties represented are without commercial production. A mile extension was made to the Eastern Fayette County pool, and production climbed rapidly in the Lake Centralia-Salem pool as operators tapped the McClosky lime at leases where production had been previously confined to upper sands.

Gulf Refining Company's E. B. Hinman 1, SE SW NE 19-5s-3e, Ewing Township, Franklin County, cored 8 feet of McClosky saturation below 2878 feet. Following an electric test, operators decided to run casing. The wildcat, far removed from production, may be the county's first producer.

3 Shows in White County

Three White County wildcats were competing for recognition as the county's first commercial oil well. Sun Oil Company's C. W. Ford 1, NW NE NE 18-5s-14w, Hawthorne Township, passed through a likely looking Cypress sand saturation between 2665 and 2705 feet for a test of the McClosky lime, where 8½ feet of saturation was topped at 2999 feet. Casing was set to the McClosky, with the hole bottomed at 3017 feet.

Mazda Oil Company's Carmi Baptist Orphanage 1, SE SE NE 22-5s-9e, Carmi Township, drilled to the McClosky, where a core showed water along with oil, and plugged back to perforate casing opposite the Cypress sand between 2876 and 2900 feet. J. B. Leggett's Matilda Hohn 1, NE NW SE 32-3s-14w, Gray Township, cored 2½ feet of McClosky, topped at 3018 feet. Casing was being set.

In Wabash County, R. S. Hayes et al's Anna Schultz 1, SE NW SW 7-3s-13w, Compton Township, across the Wabash River from Indiana's Gibson County McClosky pool opened at the turn of the year, passed through 17 feet of good Cypress sand saturation and set casing after coring 4 feet of McClosky saturation below 2872 feet. The formation was to be penetrated further with drilling of the plug. It was topped 10 feet higher than in Continental Oil Company's Cooper 1, in the Indiana pool, with the surface elevation at the Schultz 1 at 393 feet and the Indiana well at 380 feet. Storage tanks have been moved onto location.

The sixth wildcat show was Carl Robinson et al's E. E. Leach 1, SW NW 14-2s-8e, Grover Township, Wayne County, which topped 21 feet of McClosky saturation at 3343 feet. Two miles north of the Barnhill Township pool opened several months ago by Robinson's D. K. Felix 1, SW SE SE 27-2s-8e, the wildcat had casing set. Nearby, Carl Robinson's C. L. Carter 1, C SE NE NW 15-2s-8e, Grover Township, was drilling at 2800 feet.

Schuman Brothers' Elsie Combe 1, W½ SW 6-6n-3e, provided a 1¼-mile southerly extension to the Avena Township section of the Eastern Fayette County pool as it neared completion in the Weiler sand, topped at 1551 feet. The lease is a farm-out of Ohio Oil Company, which holds considerable acreage in the vicinity. The showing favors the contention of many operators that there is a definite connection between Avena Township production and that in the St. James pool in the southern part of Wheatland Township. Several dry holes drilled in the intervening area, however, indicate the connection would be narrow.

Apparently doomed as a dry hole, Murray et al's Geppert Roadway 1, Section 15-3s-3w, one mile north of the discovery in the new Cordes pool of Washington County, was shut down for orders after filling with water after plugs were drilled to Bethel saturation between 1284 and 1305 feet. It was the second time water appeared on drilling plugs, but a squeeze job had been run on the strength that it might have come from a break in the casing. It had not been definitely abandoned.

Deepest hole in Illinois, Kingwood Oil Company's McWhorter 1, C E½ SE NW 15-6n-6e, Union Township, was plugged back from 6560 feet to 3020 feet to test a relatively shallow formation. The decision to plug back followed an electric survey run May 23.

The steady climb in the state's oil production, of genuine concern to operators in Kansas, Oklahoma and parts of other states, received further impetus in recent weeks with development of the McClosky lime horizon in the prolific Lake Centralia-Salem pool of Marion County. A voluntary agreement between majors and several independents in the area to delay development of the lower horizon until the market had improved failed to hold. Several wells have been drilled to the lime since, and new McClosky tests account for a boost in current drilling operations in that sector.

Getting Big Wells

Indicative of the large production of lime wells in the area are McBride, Incorporated's, Lee 6, which flowed 250 barrels an hour for three hours before being shut in for lack of storage; The Texas Company's J. H. Young 39, which started at 128 barrels an hour after a 4000-gallon acid treatment, and The Texas Company's N. Young 11, which flowed 4222 barrels on a 24-hour test.

Day, Armstrong et al's Young Church 1-D, SW SW NW 21-2n-2e, was being rigged up as a Devonian test last week. Contemplated by the operators for several weeks, the deep try was delayed because of the objection of other operators in the Lake Centralia-Salem pool. Its successful completion could force 40 offsets. Wells are currently producing from the Benoist sand and McClosky lime on this lease.

Another development in Lake Centralia-Salem area last week was announcement that The Texas Company was seeking permission from the Centralia city council to drill diagonal wells bottomed under the city's reservoir. The practice would be a new one in Illinois, and if the proposal is approved, some 40 wells would be drilled in that manner. The Texas Company holds city-owned acreage surrounding the reservoir under lease from the city. The council authorized the drilling of one well in this manner as an experiment, subject to the approval of the state sanitary water board.

To Test Niagaran

Another attempt to gain Niagaran lime production in the old Sandoval pool of Marion County was announced. Menhall Corporation and Benoist's Benoist 1, SE NW 8-2n-1e, was to be spudded 400 feet west of Southwestern Oil & Gas Company's Benoist 21, completed last fall as the only successful Niagaran lime producer in the area. The discovery, an excellent producer, was the forerunner of two other Niagaran lime attempts which since have been abandoned. One was north of the discovery, and the other to the west. Wells in the Sandoval pool have been producing from the Benoist sand for about 30 years.

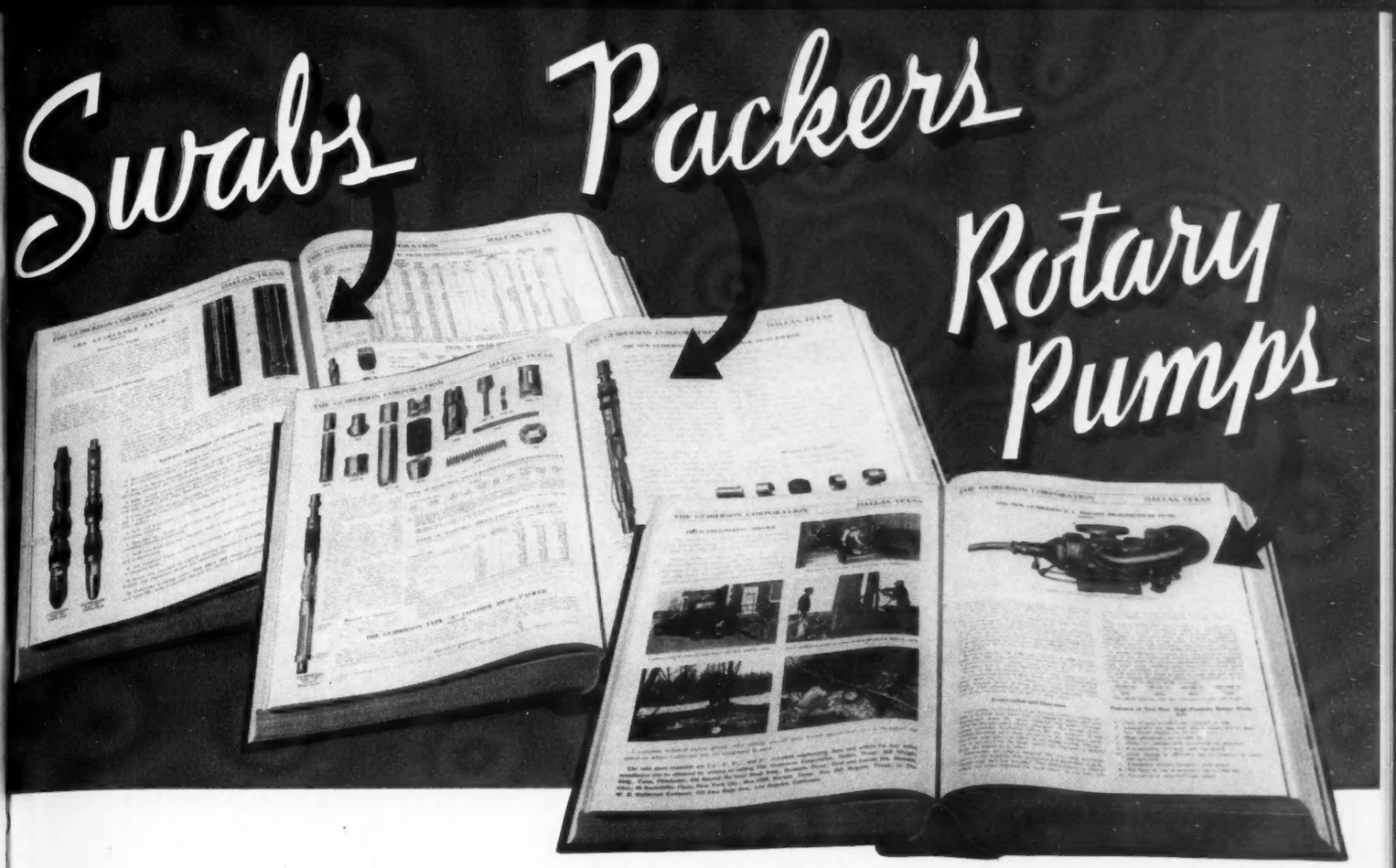
After passing through free oil and gas in the Petrol at 560 feet, Stephens & Ward's Albers 1, SW SE SE 34-4s-2w, Beaucoup Township, Perry County, set 8-inch casing to 760 feet. It was to resume for a thorough test of the Stein, Benoist and McClosky horizons.

In Tonti Township pool of Marion County opened last month by Arthur Harvey's Mercantile Bank 1, this operator was preparing to gun-perforate Mercantile Bank 2, NE SE 33-3n-2e, opposite the McClosky, between 2156 and 2180 feet. East 510 feet from the discovery, No. 2 topped the McClosky 11 feet higher than No. 1. The discovery yielded 157 barrels of oil and 35 barrels of water on its initial 24-hour test. The Texas Company, holding most of the surrounding acreage, was closely watching the outcome of the second test. Harvey staked the J. L. Kagy et al 1, NE SE 33-3n-2e, 890 feet south of the Mercantile Bank 2.

Large crowd expected at Illinois-Indiana meeting

Current interest in the Illinois Basin development is expected to draw 600 oil men to the annual meeting of the Illinois - Indiana Petroleum Association's seventh annual meeting at Robinson, Illinois, Saturday, June 3.

C. C. Carroll will preside as chairman over the morning session. Papers scheduled and their authors are: "The Devonian Formations of Indiana," (with The Structural and Isopachous Map of the Devonian), by J. R. Harris, geologist of the Indiana conservation department; "Sub-Surface Stratigraphy from Well Cuttings and Devonian Outcrops of Clark County," by Professor Ralph Essarey, Indiana state geologist; "The Devonian and Silurian Sys-



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tems in Illinois with Reference to Oil and Gas," (with Subsurface Distribution and Stratigraphy), by L. E. Workman, subsurface geologist with the Illinois geological survey; "Oil and Gas Possibilities," by Dr. Alfred H. Bell, geologist with the oil and gas division of the Illinois geological survey; "Geophysical Methods in the Exploration for Oil," by Dr. Fred Oudt, geophysicist, Shell Oil Company, Centralia, Illinois.

Alex U. McCandless will preside over the afternoon session, with the following papers to be heard: "Gas Injection Methods of Increasing Recovery," by R. J. Sullivan, division engineer, Carter Oil Company, Mattoon, Illinois; (discussion on this paper will be led by A. C. Dahl, exploration engineer for Shell Oil Company, Centralia, Illinois); "Core Analysis Theory and Practice," by E. S. Shakely, chief exploitation engineer, eastern prodution area, Shell Oil Company, Centralia; (discussion on this paper will be led by James A. Lewis, Core Laboratories, Incorporated, Dallas; "Multiple Sand Production Practices," by Bart DeLaat, division production engineer, and W. M. Saxon, production engineer, the Pure Oil Company, Olney; "Welding Casing Practices," by Prof. G. M. Stearns, assistant professor of petroleum engineering, University of Oklahoma, Norman, Oklahoma; (discussion will be led by C. G. Harrington, assistant division engineer, eastern division, Carter Oil Company, Mattoon); "Present Status of Southeastern Illinois Oil Fields," by Millard Flood, petroleum engineer, Ohio Oil Company, Robinson.

Oklahoma completes 58

Tulsa.—Oklahoma had 58 completions for the past week, 38 being oil wells making a total initial potential of 9815 barrels daily, 5 gas wells good for a combined open-flow of 18,700,000 cubic feet, 14 dry holes and 1 salt water disposal well. The state drew 46 starts during the week. Creek, Pottawatomie and Seminole counties had 6 each; Okfuskee, 4; Caddo, Stephens, Lincoln, Pontotoc and Osage, 3 each; Jackson and Carter, 2 each; Grady, Kiowa, Payne, Wagoner and Garfield counties had 1 apiece.

Hearing on Texas oil tax bill scheduled

The Senate Committee on State Affairs has scheduled a public hearing for Tuesday, May 30, on the graduated oil tax bill passed by the House last week. Several representatives of oil companies and associations have asked permission to appear in opposition to the increase.

Illinois Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Adams County—		
Wilson et al, Adams 1	*	850
Bond County—		
Eason Oil Co., St. Louis Land Bank 1	*	1340
Clay County—		
Pure, Priestman 3A	1046	3125
Clay City Banking Co. 1	926	3125
Leon Clark 5	132	3183
Dick Duncan, Liggett 1	42	2383
Clinton County—		
Shell, Koelmel 4A	106	1214
Finney Heights Add., W. J. McCullough, G. Langford 1	*	1384
Petroleum Service, Ltd., V. Bott 1	*	1245
Coles County—		
Texas Canadian, Miller 1	*	2158
Crawford County—		
H. R. Snavely, Lloyd Man 1	6	1600
Fayette County—		
Carter Oil Co., Harvey Durbin 6	216	1586
Hopper 4	398	1582
Hopper 5	430	1573
Hopper 6	362	1574
Ramsey-Hopper 4	375	1589
Ireland 4	192	1564
McCloy 2	798	1535
McCloy 3	354	1574
Griffith 6	525	1560
Hogge 1	160	1531
Sloan 1	214	1577
State Bank 2	175	1610
Gregg 2	114	1614
McClain 2	972	1577
McClain 5	996	1584
McClain 1	312	1586
T. W. Lee, Horner 2	240	1587
Horner 3	180	1589
Mabee Drilling Co., Homan 6	120	1606
Shell, Fulton 6	36	1585
Hevgley et al, Buff 1	*	1609
Holland et al, Avena Methodist Church 1	*	1494
W. C. McBride, Inc., Sapp 1	106	1544
Sapp 2	215	1556
Texas Co., Kimbrell 1	*	1844
Franklin County—		
Adams O&G Co., Old Ben 1	*	4688
Fulton County—		
K. & F. Dev. Co., Frederick 1	*	590
Hancock County—		
Groves & Cooke, Talbot 1	*	530
Jasper County—		
G. J. Grier, Crause 1	*	3250
Jefferson County—		
Carter, Boggs 2	312	1943
Marion County—		
Texas Co., Farthing 3C	210	1892
Farthing 3A	609	1796
Heyduck 5	148	1875
Fyke 8	280	2066
Fyke 9	105	1895
Fyke 10	231	2065
Fyke 3	105	2097
Fyke 4	805	2059
Fyke 5	126	2075
Richardson 6	483	1765
Richardson 3-B	210	1828
Small 11	315	1822
Bundy 4	175	1791
Bundy 5	210	1776
Tate 2	*	2006
Tate 8	630	1748
Tate 9	196	2050
Hawkins Community 2	665	2061
Hawkins 10	189	1804
Hawthorne 7	987	2062
Stroup 4	371	2011
Stroup 5	175	2070
Stroup 6	469	1773
Ray 4	105	1872
Shanafelt 2	126	1851
Friesner 8	791	1720
Easley 7	336	2070
Meyer 1	217	2126
City of Centralia 27	938	2060
Kalkbrenner 26	420	1988
Bryant 8	182	1887
Lazaretti 2	336	1840
Potter Bros., M. & I. RR. 2B	450	1828
Shell, Farthing 7	828	1789
Young 7	293	1966
Dr. Johnson, Dunbar 1	10	1390
Coleman et al, Hadley 1	10	1232
Cameron, Antioch Church 2	1500	2055
Ohio Oil Co., Young 11	110	1900
Magnolia, Young 17	3600	2060
Texas Co., Wayman G-1	I	1698
Carr "B" G-1	I	1772
Reed "A" G-1	I	1745
Johnson G-1	I	1747
Montgomery County—		
Swords & McDougal, Brewner 1	*	1050
Perry County—		
Sooner Prod. Co., Harska 1	*	1571
Richland County—		
Leathers et al, Yonaka 1	*	3062
Mabee Dr. Co., Sparr 1	60	2621
Sparr 2	*	2625
Pure, Southgate 1	81	2634
St. Clair County—		
Hempen et al, Muehler 1	176	676
Saline County—		
Kingwood Oil Co., McIntyre 1	*	2712
Shelby County—		
Independent Producers & Refiners, Hackenburg 1	*	1715
Washington County—		
W. C. McBride, Inc., Wiese 1	214	1288
August Wiese 2	262	1264
Luney 1	*	1554
Shell, Holston 1	233	1296
Holston 2	137	1297
Wayne County—		
Pure Behymer 3A	871	3083
Hubble 1	192	3113
Kiger 1A	308	3169
Oil Well Dr. Co., McPherson 1	240	3263
White County—		
Arab Pet. Corp., Pearce 1	*	3053

"I" indicates gas input wells.
* Failures; † Junked; ¶ Million cu. ft. gas.

Kentucky Fields

Henderson wildcat to plug back from McClosky

Owensboro, Ky.—L. J. Palmer's Oscar Letcher 1, on the fork of the Green and Ohio Rivers, near Schuffletown, Henderson County, was given up as a possible McClosky lime well, but the wildcat was expected to make between 50 to 60 barrels a day on plugging back to the 300 feet Cunningham sand. Acid treatment was given the McClosky before the decision was reached to plug back. The Cunningham will be shot.

A third operation was started last week in the vicinity of J. C. Preston's C. H. Abel 1 strike east of Owensboro, Daviess County. Snowden & McSweeney began drilling Abel 1 on the eastern 100 acres of the farm. It is being drilled by Springrose Drilling Company with a rotary outfit, and hope to reach the McClosky within a week. A breakdown delayed the second well, Smith & Vickers T. J. Turley 1, ¾ of a mile from the discovery, just after it was spudded.

An acid treatment at the discovery without use of cement failed last week, and a plug was inserted preparatory to a second treatment. It had been pumping at the rate of 7 barrels an hour during short periods since being brought in two weeks ago.

A terminal will be erected at Spottsville, Henderson County, by Ashland Oil & Transportation Company to facilitate river shipment of crude from surrounding areas. A half-acre was leased from D. D. Langley last week for the terminal.

In Todd County, C. C. Massey, Dan E. Whatley and Harry C. Appell will drill the Seldon Slaughters 1 to the Coniferous. It is 2 miles east of Clifty, and several majors are reported interested in the test. Geological work was done by A. W. Ankney and Dr. Russell. F. L. Cooper's Ebling 1, north of Kirksmansville, skidded derrick from a bad hole and was drilling at 250 feet on a McClosky test.

Kentucky Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Breckenridge County—		
H. C. Hume, Leslie 1	*	1545
Butler County—		
Cumberland Pet. Co., Brown 1	30	410
Daviess County—		
Cane Run Pet. Co., Alsip 4	*	950
Floyd County—		
Hamilton Gas Co., Hatcher D-80	¶1.05	1203
Hatcher D-79	¶.64	1193
Inland Gas Co., Layne Heirs 200	¶.25	2260
Hancock County—		
Eureka Dr. Co., Baker Bros. 4	30	590
Henderson County—		
Sun, Lockett 1	*	2733
Carter, King-Pritchett 1	*	2650
Hopkins County—		
Central States Oil Co., Cox 1	240	2092
Muhlenberg County—		
Phillips, Browning 1	*	1835
Miller et al, Goods 1	10	873
Sharadolea Dev. Co., Morris 1	*	1579
Ohio County —		
H. Ogle, McQuarry 1	*	650
Rex Pyramid Oil Co., Helm 13	10	536
Pike County—		
Columbian Fuel Co., Smith 2 GW-824	¶2.16	1803

* Failures; † Junked; ¶ Million cu. ft. gas.

Indiana Fields

Spencer wildcat cores saturation in Waltersburg.
Small McClosky producer in Posey County.
Illiand test shows in Waltersburg and Jett sands.

Evansville, Ind.—Trio Oil Company's Frank R. Swallow 1, SW SW SE 32-6s-7w, Luce Township, Spencer County, was moving in a cable outfit to deepen after coring 10 feet of saturation in the Waltersburg sand, topped at 990 feet.

In Posey County, A. Grewe and August Kruse's (Clint Crosby's) Pauline Scherer 1, NW NW SW 13-7s-13w, Black Township, swabbed considerable oil after a 3000-gallon acid treatment. Indications were that the wildcat, which is bottomed in the McClosky at 2713 feet, would be completed at from 15 to 20 barrels daily. Derrick was being torn down to make way for a pump.

Illiand Oil Company's Charles Strueh 1, C S NE SE 1-7s-12w, south Marrs Township, set casing after reporting saturation in both the Waltersburg and Jett sands. Location for Adolph Wintner's Menzie Cox 1, SW 6-4s-13w, Bethel Township, was announced. It will be drilled by James Gwinn and C. R. Obermeyer, contractors.

In the Griffin pool of Gibson County, Continental Oil Company's Cooper 2, NW SW SE 12-3s-14w, drilled through 14 feet of Cypress sand saturation, and on deepening to the McClosky lime found water in the lime. It was coring on in the St. Louis at 3080 feet, and if deeper production is not obtained will be plugged back to the sand. Several wells are producing from the McClosky in this pool, and one was recently completed in the Cypress sand.

Shut in for several months for lack of facilities to move crude, wells in the pool now have a market for about 2400 barrels daily. The oil is being moved by pipe line to Griffin, from where it is shipped to refinery by tank car. Fitzpatrick and Hays, who brought in the discovery last December, erected derrick last week for the second well on the 40-acre discovery tract. It is the Cooper 2, NE NW NE 13-3s-14w, Wabash Township. With three wells producing and two wells drilling in the pool, Hollandsworth and Bander have located two additional wells. One is southwest of the Cypress sand completion of W. F. Lacy, and the other south of Hollandsworth and Bander's Cooper 1.

In Spencer County, L. L. LeMoine and J. Ervin Taylor will drill Delbert Haynes 1, SE SE NE 11-6s-7w, a mile northwest of Midway, to the McClosky with a cable tool outfit. In the new Rockport gas field, W. W. and Frank Damron's A. J. Kinney 1, NW NE 19-7s-6w, north of the discovery, was nearing the Waltersburg sand, producing formation in this area. Drilling at about 800 feet was these operators' Leah Kopp 1, SE SE 18-7s-6w, east of the discovery.

Lease values in the vicinity of the gas pool have risen markedly within the past two weeks, with several major companies reported buying. Until discovery of the Rockport gas pool, production in the county had been confined to shallow wells held by Troy Refining Company, of Troy, Indiana.

Arthur Grewe et al's (McWilliams-Schwartz') Jas. S. Brammer 1, SE NE NE 14-5s-9w, Campbell Township, which developed water trouble after showing for Warrick County's first oil well, pumped at the rate of 150 barrels a day during a five-hour test last week. It was not expected that the rate would hold, but a fair well was considered certain. Production is from the McClosky, topped at 1887 feet.

Hawaiian Exploration Company's May and Josephine Frakes 1, SW NE SE 20-8n-9w, Hamilton Township, Sullivan County, resumed drilling below 2115 feet after a shut-down with a mechanical failure. Bottom was believed to be just above the Devonian.

Parshall-Graham Oil Company's Maude Jordon Simpson 1, SW NW NW 23-1n-10w, Johnson Township, Knox County, had fresh water when casing was perforated opposite the upper break in the Salem sand. A squeeze job was being attempted to shut off the water.

Shut down for title work, Tide Water Associated Oil Company's Lucy P. Hyne 1, NW NW NE 10-4s-13w, Rodd Township, Posey County, resumed drilling at 2780 feet and at last report was at 2855 feet. Also interested in the wildcat are Exchange Oil Company and Yingline & Hays.

Kansas stakes 47

Wichita.—During the past week Kansas completed 15 oil wells for a total initial potential of 17,996 barrels, maintaining its 1000 barrels per well average. One gas well was completed for an open-flow of 20,367,750 cubic feet, and 4 of the completions were dry holes. One location was abandoned and 1 completion was a salt water disposal well. Forty-seven locations were staked during the past week. Rice County, leading with 10, was followed by Ellis, Russell and Woodson with 4 each, Barton and Greenwood with 3 each, Butler, Harvey, Johnson, McPherson, Reno and Stafford with 2 each, and Barber, Cowley, Ellsworth, Gray, Haskell, Marion and Sedgwick 1 each.

Indiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Gibson County—		
W. F. Lacey, Cooper & Thomas 1..	600	2917
W. R. Nicholson, Fleener 1.....	*	2808
Ray J. Ryan, Dunn 1.....	*	3026
Posey County—		
Sun, Battelger 1	*	2811
Spencer County—		
Damron et al, Spain 1.....¶5.50		890

* Failures; † Junked; ¶ Million cu. ft. gas.

Ohio Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Athens County—		
C. W. Nuzum, Hoskinson 1.....	3	1517
Speary O&G Co., Poston 3.....	*	1473
Cuyahoga County—		
Benedum-Trees, James 1.....	2.—	2836
Fairfield County—		
Gas Prod. Co. et al, Barry 2.....	50	1976
City Nat. Gas Works, Stuckey 2..	¶.02	2155
Guernsey County—		
Purdy, Miller 1	¶.06	1460
Jewell et al, Thomas 1.....	¶.08	1486
Holmes County—		
Ohio FG Co., Weimer 1.....	¶.08	3067
Knox County—		
Upham Gas Co., Purdy 1.....	¶.50	2590
Licking County—		
McKay Bros., Dunn 1.....	*	2890
Medina County—		
Ohio Fuel Gas Co., Hunt 1.....	¶.20	3041
Perry County—		
Altier & Sons, Gladden 10.....	¶.08	1087
Davis & Hazlett, Harrison 1.....¶1.50		3867
Stark County—		
Obermiller Bros., Bain 1	¶.25	4409
Washington County—		
Ridgeway & Patterson, Forshey 2..	*	1200
Hupp et al, County Infirmary 12..	*	465

* Failures; † Junked; ¶ Million cu. ft. gas.

New York Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegany County—		
Pioneer Oil Co., Leona Wood farm, Willing	4	1060
Leona Wood farm, Willing.....	3	1048
L. H. Thornton et al, Shaughnessy farm, Willing	5	1076
Bohne Bros., Jacob Matena farm, Willing	4	1063
The Otsquago Corp., Pike farm, Alma	7	1426
Allegany: Water Intake Wells		
Ebenezer Oil Co., Emerson farm, Scio	...	1048
Budd Oil Co., Anderson farm, Alma ...		1415

* Failures; † Junked; ¶ Million cu. ft. gas.

Pennsylvania Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Bradford District		
J. H. Brahaney, Fee.....	1	....
Ernest Meridan et al, Cleveland...	1	....
Hardwick, Rice & Tuohy, Fisher..	2	....
Penn Valley Crude Oil Corp., Redfield	5	....
Forest Oil Corp., 2 wells.....	2	....
Forest Petroleum Corp., 2 wells...	2	....
Niagara Oil Corp., 2 wells.....	2	....
Niagara Oil Corp.	1	....
Bradford Transit Co., 5 wells.....	5	....
Bradford: Water Intake Wells		
Forest Oil Corp.	...	....
Forest Petroleum Corp.	...	....
Butler-Armstrong District		
Willis M. Ruby, Jacob Snyder.....	2	....
Middle District		
S. Y. Ramage, Jr., Henderson....	1	....
New York-Pennsylvania: Gas Field		
G. L. Cabot, Inc., Plank School....	¶	....

* Failures; † Junked; ¶ Million cu. ft. gas.

Pennsylvania Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegheny County—		
Fisherville Oil & Gas Co., F. Snyder F-13	¶.08	2850
J. S. Wally, Shaw 1.....	¶.02	1890
Indiana County—		
Equitable Gas Co., Beltz 3243.....	¶.02	3800
Washington County—		
A. O. Lewis et al, Dodd 2.....	25	2951

* Failures; † Junked; ¶ Million cu. ft. gas.

West Virginia Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Lincoln County—		
Woodall Gas Co., Stowers 2.....	¶.37	3630
Marion County—		
Carnegie Nat. Gas Co., Caseman 2	*	3238
Wetzel County—		
Carnegie Nat. Gas Co., Rush 1...¶1.02		1980
Manufacturers L&H Co., Lantz 4..	¶.15	3074
Wood County—		
Millinger et al, Marshall 1.....	5	1673

* Failures; † Junked; ¶ Million cu. ft. gas.

Oklahoma Fields

Source of oil in Kiowa County strike is unknown.

St. Louis continues most active field in state.

Tulsa.—The summer drilling campaign came into full swing last week. The record of the week was 58 wells completed and 46 started. The 38 oil wells added to production brought only 9815 barrels of initial production. The list was made up of another 5 gas wells, 14 dry holes and a salt water disposal well.

The Kiowa County discovery of the previous week was still to be tested, as it was necessary to kill its flow in order to get it under control, so casing could be set.

The old Seminole area continues to provide the greater number of completions in Oklahoma. St. Louis field, Pottawatomie County, is still the state's most active. Recently development has been expanding in Shawnee pool, which has been extended, and revival of drilling is assured. This area also leads in wells started, as both Seminole and Pottawatomie counties had 6 locations each, a figure also matched by Creek County.

The deepest well ever to drill in Oklahoma, Continental Oil Company's Proctor 1, C NW 28-10n-20w, Washita County, is ready to pass 12,000 feet.

Shut In Discovery

Flow of the discovery well near Hobart, Kiowa County, was killed May 22, after a representative of the corporation commission made complaint of waste. Gled Oil Company and Russell S. Tarr had permitted Watkins 1, SWc NW 20-7n-17w, to flow into pits at the rate of 1000 barrels daily under the impression that output at this rate would not continue long. It will not be tested further until more tankage has been erected. Meanwhile, oil held in the pits is being hauled away in trucks to Grandfield, Oklahoma.

One reason high output from the well was not expected to be of long duration was supposition that it is flowing from Viola lime, often erratic in Oklahoma. Identity of the producing formation is not yet final, but most geologists lean to the Viola lime. During its period of flowing by heads the well is credited with 12,000 barrels output.

No offset drilling has been started at Hobart. Shell Oil Company, which farmed out the lease on which the discovery was drilled, has two offset locations and Phillips Petroleum Company has the other. Seismograph crews have come into the area during the past week. Southwest of Watkins 1, Hagerling and Lawson resumed drilling on Kimray 1, SW SW NW 36-5n-18w, which had been shut down for a month at 942 feet. They are making location to drill Bozman 1, NEc 14-5n-17w. H. R. Cromwell is making arrangements for a test to be drilled in NWc 30-5n-17w.

The southwestern part of Oklahoma had another discovery during the week with deeper production for the Frederick pool, Tillman County. Indian Territory Illuminating Oil Company got a swabbing output of 300 barrels daily from a deeper lime at 5315 feet in Fillmore 1, SW SW SE 36-2s-19w. It is a north offset to a producing well in the Canyon lime, in which there are 10 shallower producers in the field. Identity of the lime at the deeper level has not been established.

Efforts are being made to get production above the Arbuckle lime in the Carter County wildcat of Pure Oil Company, Noble 1, C NE SE 35-3s-1e, which found that formation dry at 8485 feet. The formation was acid treated, bailed dry and showed only gas in limited quantity.

St. Louis Busy

The old St. Louis field continues to lead the state in drilling activity, a recent check showing 5 wells being completed, 9 drilling, and 3 starting. A development there last week was a flowing well at the rate of 1400 barrels daily after completion had been made on the pump. Mid-Continent Petroleum Corporation had pumping equipment installed in Kay-Dot 1, NE NE SE 36-17n-4e, and the well was rated at 230 barrels daily from Simpson dolomite at 4306 feet. The flow began with rods still in the hole.

Output of St. Louis has increased to around 37,500 barrels daily in three months, a jump of 10,000 barrels. Indications are that it will move above 40,000 barrels.

An effort will be made to get First Wilcox sand production in the northeast outpost well of Ramsey field, Payne County, where E. H. Moore, Incorporated, and British American Oil Producing Company previously decided to try for production in the Hunton lime. Gulliam 1, SW NW NE, 18-18n-2e, drilled 11 feet deeper to 4924 feet, recovered two feet of saturation in the Wilcox sand. Perforations will be made to seek output in this section. The Hunton lime, which has had saturation in most Ramsey wells, may be tested if the lower level is not productive. The well is low on structure.

North of Ramsey the wildcat of Kirk-Green-Way, Incorporated, had top of the Mississippi lime at 4546 feet and was drilling below 4580. This test is not considered to be on the Ramsey structure.

Testing in the Pittsburg County wildcat of Phillips Petroleum Company, Hubacher 1, C NW NE 11-7n-15e, will come with cleaning up the fish that resulted from a blowout while coming out of the hole, bottomed at 7517 feet in Wilcox sand. The blowout damaged the rig and let 3000 feet of drill pipe drop in the hole. It has been recovered, leaving drill collar yet to be removed.

Oklahoma Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Beckham—		
Westook, Coogan 1, c se ne 3-9n-25w	¶5	3537
Caddo—		
Magnolia, McKenna 12, 200 ft n sw nw se 11-5n-9w	*	3423
Stephens, Melton 4, sw se se 26-6n-10w	¶10	4388
Palmer, Sturba 2, ne nwc sw 35-6n-10w	2082	3401
Cotton—		
Costley, Garrison 1, ne se nw 18-4s-10w	*	1234
Creek—		
Comail, Cracker 1, ne nw se 27-17n-9e	*	3336
Turnbow et al, Connrod 1, ne se se 3-19n-9e	5	2016
Dunn et al, Anthis 1, 160 ft w nw se 34-14n-10e	460	3188
Garvin—		
First National, Butterly 1, nec se 22-1n-1e	¶2.9	5005
Grady—		
McCasland, Horton 1, nec sw 8-3n-5w	55	2767
Jackson—		
Burnham, Sumner 2, nw ne se 6-1s-19w (otd 2552 ft)	100	2560
Kiowa—		
Pure, Fuqua 1, swc ne 18-6n-16w	*	2019
Lincoln—		
Jones Associated, May 4, ne se se 10-14n-6e	25	2994
Wilcox, Sac & Fox 26, nwc 22-14n-6e	25	3082
Logan—		
Helmerich et al, Johnson 1, sec 2-15n-1e	*	5373
Murray—		
Shell, Wolf 1, c se sw 8-1n-2e (otd 2522 ft)	10	2275
Muskogee—		
Bryan, Mathews 3, cel swc ne 19-15n-15e	5	1530
Noble—		
Turk et al, Choate 1, swc se 31-23n-2w (salt water disposal well		871
Okfuskee—		
Stekoll, Ditzler 2, nw nw se ne 2-10n-11e	*	1707
Carter, King 2, c se sw 2-11n-8e (otd 3919 ft)	242	3412
Carter et al, Micawber 1, swc 6-13n-8e	6	2498
Lease Investment, Knight 1A, ne nw ne 28-13n-10e	86	2890
Oklahoma—		
Sinclair Prairie, Stamper 8, nw sw nw 30-11n-2w	68	4085
Walters, Olmstead 1, c e½ se nw 12-14n-3w	*	6524
Okmulgee—		
Stekoll, Buck 2A, sw se ne ne 23-16n-12e	*	2415
Moffett, Grayson 10, ne se nw 16-11n-12e	¶½	1320
Craig, Lewis 4-A, 75 ft n c sw ne 25-14n-14e	8	1132
Edwards, Monday 4B, c nw ne 33-15n-14e	6	814
Francis, Adams 5A, nw nwc 33-15n-14e	5	1544
Pawnee—		
Brewer, Spess 1, ne sw nw 27-20n-9e	27	2060
Johnson, Finley 4, nw sw nw nw 27-20n-9e	35	2110
Payne—		
Berry et al, Whitely 1, nw sw se 18-18n-2e	*	4975
Pontotoc—		
Magnolia, Shaffer 8, se sec nw 25-2n-6e	70	2657
Patsy, Bates 3, sw nw sw 26-2n-7e	2404	4032
Stanolind, Hardin 6, nw sw sw 30-2n-7e (otd 4202 ft)	42	4430
Simpson et al, Statler 1, ne sw sw 34-2n-7e	40	1844
Hardin, Norman-Fleming 1, nec 13-5n-4e	35	2581
Lake, Neal 2, ne nw sw 25-5n-4e	20	2610
Pottawatomie—		
Denver, Ray 2, ne sw ne 2-6n-4e	300	4030
Atlantic, McCurry 2, nec sw 6-6n-4e	384	4488
Schaffer, Zoeller 1B, 110 ft s nwc sw 5-6n-5e (otd 4348 ft)	144	4290
Berkey, Bruno 2, ne nw nw 6-6n-5e	576	4168
Atlantic, Bass 1, swc se 9-7n-4e (otd 3963 ft)	63	3625
Taber et al, Engle 1, nw sw ne 34-7n-4e	33	4355
Mid-Continent, Kah-dot 4, nec se 36-7n-4e	440	4305
Seminole—		
Stanolind, Wilson 1, nw sw ne 4-5n-6e	480	3260
Stanolind et al, Reed 1, swc se 9-7n-4e (otd 4073 ft)	264	4148
Wood et al, Tobin 1, swc nw 22-7n-5e	98	2803
Newsom et al, Smith 2, se ne ne 20-7n-6e	*	4344
Malernee et al, Shelton 6, se sw nw 33-7n-6e	70	2968
Winoma et al, Fish 4, nwc ne 30-7n-8e	742	4121
Garfield Buell, Madgett 1, se sw se 15-10n-5e	*	4810
McMahon, M. Haite 1, cwl nec 34-10n-6e	85	3811
Moss, Haite 1, cwl se ne ne 34-10n-6e	*	4387
Magnolia, Harjo 1, 160 ft e sw nw nw 35-10n-6e	*	3781
Stephens—		
Phillips, Culbertson 1, nwc se 4-1n-5w	275	5616
Tillman—		
Helf et al, Brisley 1, nec 22-1s-19w	*	3515
Tulsa—		
Cummings, Berryhill 1A, nw nwc 28-17n-13e	¶0.3	1440

* Failures; † Junked; ¶ Million cu. ft. gas.

Kansas Field Developments

New pool is found near Big Creek and Hall fields. Neidenthal East strike earns 500-barrel potential.

Wichita.—New pool designations were given two recent discoveries in Russell County last week. The two are in the cluster of pools that make this county first in Kansas in separate pools.

The Mudd pool designation followed completion of Mudd 1, NEc 6-14-15w, which had potential rating of 570 barrels from the Lansing-Kansas City lime section, total depth 3180 feet. It was drilled by R. G. Balloum. The well is ½ mile east of the Big Creek field and ¾ mile southeast of the Hall field.

The area around Phil Han Oil Company's Reinhardt 1, SE C NE 34-14-15w, was designated the Neidenthal East field, as the well is only three fourths of a mile east of Neidenthal. It made potential of 500 barrels from Arbuckle lime; depth is 3259 feet.

Extension of the Barnholdt pool ½ mile southeast was assured when oil rose 2950 feet in the hole after plug had been drilled in Mattson 1, C W½ NW 31-20-5w, by Continental Oil Company. The well began showing last week when top of the Chat was found saturated at 3297 feet. Casing was set and plug drilled out to 3317 feet.

Three miles southwest of Ellinwood field, Barton County, Crown Central Company pumped 70 barrels of oil and 70 barrels of water in 24 hours from Koch 1, C NE 23-21-12w, after acid treatment. Arbuckle lime was topped at 333 feet, 5½-inch casing set at 338. Total depth is 3358 feet. This well had showings two weeks ago.

A pumping output of 65 barrels in 3 hours came with testing of McGlinn 1, drilled by Herndon et al in C W ½ SW SW 4-20-93, Rice County, ¼ mile northeast of the Proffitt discovery of Phillips Petroleum Company, CEL NE NE 8-4-9w. The McGlinn well was drilled to 3255 feet in Arbuckle lime and acid treated.

A quarter of a mile west of production in Hittle field, Cowley County, Arthur Brewer had 1650 barrels of oil and 350 barrels of water in Hughes 1, SE NE SE 20-31-4e. It was drilled to 3383 feet in Arbuckle lime.

Possibilities of production in Norton County, 20 miles northwest of production in Rooks County, were indicated in the Lansing Kansas City lime, where Arbuckle lime proved dry. The Power Oil Company's Van Patton 1, C NE 26-4-21w, was perforated between 3475 and 3482 and between 3487 and 3496, then treated with acid, first with 1000 gallons, later with 8000 gallons. The well was swabbing 200 barrels daily of 18-gravity oil.

Either a new pool for Rice County or a ½ mile extension for Chase, came with potential rating of 1080 barrels for Nichols 1, C W½ SW NE 30-19-9w, where Gulf Oil Corporation drilled to 3249 feet in Arbuckle lime.

West of the Chase 1½ miles and 1 mile north of Silica pool, Phillips Petroleum Company had a showing for production in Brandenstein 1, C SE NW 35-19-10w, where Arbuckle lime was found between 3378 and 3383 feet. Small amounts of oil were recovered by swabbing and plans were made to run tubing to try for pumping production.

Hittle, Cowley County, had another big well. Waite 5, NW NE SW 21-31-4e, drilled by Hartman & Blair and an offset to production, was rated at 7810 barrels from Arbuckle lime at 3349½ feet. Flow was through 3-inch tubing.

Kansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Barton—		
Hollow et al, Schuefter 1, sec 19-20-11w	*	3098
Cowley—		
Brewer, Sherwood 1, sw nw nw 27-31-4e	*	3474
Ellis—		
Dickey, Gumble 1, swc se 6-11-17w	4257	3445
Gulf, Mai 2, nw sw se 14-11-17w	3500	3367
Cities Service, McCord 2, se nw ne 26-11-17w	274	3563
Phillips, Peavey 1, swc se 13-11-18w	1364	3411
Smith, Werth 1, swc se 33-15-18w	Abnd.	Lcn.
Ellsworth—		
Gulf, Janssen 1, swc 29-17-10w	716	3272
Harvey—		
Skiles et al, Short 3, c ne ne 30-23-3w	811	3361
Pratt—		
Sinclair Prairie, Greider 1, ne se se 26-27-11w	¶20.3	4079
Reno—		
Derby, Wood 4, nwc ne 36-22-5w	604	3916
Olson et al, Blake 7, nec sw 23-23-4w (salt water disposal well)		4709
Rice—		
Continental, Williams 6, nw se nw 13-18-8w	2014	3230
Shell, Zajic 15, ne se ne 13-18-8w	1276	3228
Hinkle, Turesdale 1, nwc 34-19-9w	575	3217
Vernon et al, DuPont 1, nw sec ne 22-19-10w	*	3325
Weaver, Peterson 1, nwc ne 4-20-9w	48	3258
Russell—		
Sinclair Prairie, Rogg 4, cwl ne sw se 29-14-13w	885	2923
Hartman et al, Gurney 2, nw ne nw 23-14-14w	518	3126
Coralena, Sellens 4, nwc se 29-15-13w	768	3321
Deines 10, se sw ne 36-15-14w	386	3308
Woodson—		
Billerman, Houston 1, 130 ft s cel swc 36-24-13e	*	1937

* Failures; † Junked; ¶ Million cu. ft. gas.

Missouri

Missouri tests have showings of oil

St. Joseph, Mo.—While the two advanced wildcat tests in northwest Missouri were running casing as the fourth week in May began, a more recent starter in Clinton County was making hole and Carroll County was luring Illinois capital for a test in territory that gave a showing of gas in 1923-24.

The J. H. Everitt well, spudded March 7 in SW SW SE 30-62-38w, Holt County, is running 5-3/16-inch casing at 2440 feet after a long and expensive shutdown because of frozen tools. This well, a mystery from the first, has been exceedingly close with its information. High spots there have been a gas showing at 308 feet, oil showing not far below 500 feet and good looking cores when the Mississippi lime was found at 1902 feet. It is believed the well has had at least four good showings of oil.

Frank Hopper of Hutchinson, Kansas, has drilled to 1225 feet in NW NW NW 36-52-32w, Clay County, since he spudded on March 29. Being in the middle of a shallow gas field, he hit gas in the Wayside sand around 350 feet and found the Mississippi at 915 feet, reporting a good show of oil. Hopper then set casing and drilled ahead to 1225 feet, whereupon he set 6⅝-inch casing. He had gone out of the lime at that point, but it was not known whether it was the end or a break.

Everitt is using a rotary rig, Hopper has standard cable tools and the test that is moving along fast in third place is using a portable machine. That is the well of C. E. King of Houston, Texas, which is drilling in SE 13-55-32w, Clinton County. King spudded April 27, broke a stem at 260 feet and experienced trouble with cave-ins at 705 feet. But has drilled to 1003 feet.

George W. Moore and associates of Joplin, Missouri, in NE SW SW 11-57-31w, DeKalb County, are now at 750 feet, and are running 10-inch casing. They expect to find the Mississippi at 1050 to 1200 feet.

North and west of this test, Bradley Brothers of Wichita are operating a machine. They spudded May 6, cased off soft gravel and shut down May 12 for engine repairs. Resumption is scheduled for early this week. Bradleys are generally believed to be on an excellent structure, at any rate their test brought forth support from Stanolind (740 acres) and Skelly (240 acres). Major support has been rare to date in the basin.

Of wells begun in northwest Missouri, the Eastern Drilling Company test in NW NW NE 28-53-32w, Clay County, is the least advanced. It was spudded March 17, but title difficulties have kept it dark virtually ever since. Magnolia Petroleum Company has given support to that well and is informed that titles are in order now and that drilling can be resumed.

Andrew County is about to witness the starting of a second test in SE NW NE 34-60-35w, a short distance southeast of the Bradley well. Laurence R. Jones, son of Operator Albert Jones of Wichita, is in charge of the second test.

Holt County will have a second test too. Clarence Marcum of Ada, Oklahoma, moved in a derrick for a rotary rig weeks ago, but recently made some sort of farm-out with George Manahan, Tulsa drilling contractor. Tools are supposed to be on the way.

An Arbuckle test is proposed in township 55 north, range 25 west, Carroll County. Cable tools are to drill 1750 to 1800 feet, unless oil is found earlier. Drilling is to start on or before September 15.

Previously, Carroll County was in the news with a location by Dorsey Hager and others in 36-55-23w. Its neighbor, Livingston County, has a Bradley Brothers location in SEc NW 22-58-23w and a tentative location near Hale by F. L. Vaughan and others of Oklahoma; therefore the Carroll-Livingston sector is beginning to warm up.

The enthusiasm there is based on two wells drilled in 1923 and 1924 not far south of Chillicothe. Those tests, in

Carroll County had excellent showings of oil and gas. One, in fact, was credited with a flow of 1,000,000 cubic feet of gas, but as gas had not been sought no effort was made to handle it and the tests ran out of money before oil could be found in paying quantities.

Meanwhile H. V. Elwell of Wichita, Forest City basin pioneer, is squaring off for a test in NW NE 12-62-21w, Sullivan County. On hand last fall, he attempted a stock selling plan, which was not a success and then lined up support from Lario, Stanolind, Magnolia and Skelly. Elwell's holdings extend to Harrison County, in which he will ultimately drill. Sullivan County, however, will see his first test.

Missouri's easternmost test, the Charles G. Delfeld's Turner 1 is below 300 feet and was temporarily shut down at last reports. That is in NW NW 27-58-9w, Shelby County.

Morris Brin and Joe Nathan, Wichita operators, said they had staked a location in C NW NW 1-61-38, Holt County. This is five miles east of the J. H. Everitt Fred Spring 1, spudded in March. They will make an Arbuckle test, expecting to find the lime at about 2600 feet. Their test will be supported by Carter Oil Company, which will cut samples.

The Atchison County test was announced by Byram-Jackson-Blair Oil Corporation. Contract has been awarded to Earl F. Wakefield, Wichita. The well will be drilled in NW NE 17-6-20, Atchison County, on land owned by the National Life Insurance Company of Montpelier, Vt.

In the corporation are Billy Blair, president of the Atchison Chamber of Commerce; Ed Jackson and John Byram, Atchison motor car dealers. They have a 5000-acre block five miles west of Atchison, near Shannon.

J. A. Turner of Tulsa, is moving in cable tool machine for Rule 1, C SW SW 20-53n-33w, Platte County. The test will be on a structure known as Smithville dome, which has been outlined by old surveys and described in bulletins of both the United States Geological Survey and the Missouri Geological Survey. It is proposed to drill to Arbuckle lime.

Buhler talks of chances for oil in Missouri

Rolla, Mo.—Geological formations in northern Missouri that indicate the presence of oil were explained to a visiting delegation of state legislators at Rolla last week by Dr. H. A. Buhler, state geologist.

He told the group that not over a dozen holes had been punched in northern Missouri, and all from 40 to 50 years ago, in the area underlaid by the Devonian-Silurian formation. Wells in the northwestern part of the state could be drilled to as deep as 4000 feet and still have possibilities of producing oil, Dr. Buhler said. He estimated, however, that formations in the northeastern part of the state that might be productive of oil would probably be exhausted at 1200 feet.

Deep drilling would be necessary to ascertain definite information concerning the southeastern part of the state, although there is believed to be oil possibilities in that area also, according to the geologist.

New Mexico Fields

Lovington outpost finds water in projected pay. Magnolia well establishes new potential record.

Hobbs, N. M.—Three flowing wells within the proved limits of the Lovington pool, Lea County, were recorded the past week, and an outpost appeared to be a failure after encountering water at the projected oil level.

Magnolia Petroleum Company's Selby 1, C NW NE 7-17s-37e, situated 1¼ miles east by south of oil production, logged sulphur water at 4893 feet, or 984 feet sub-sea, and at 4797 feet tested one bailer of water per hour. The volume of water decreased in deepening with cable tools to 4812 feet. This outpost will be carried to the main water zone, although it is considered low on structure. The company's State 1-Q, south offset to Skelly Oil Company's oil discovery, gauged 53 barrels of oil in 8 hours through ¼-inch choke after using 6000 gallons of acid in broken lime at 4735-5110 feet. It is bottomed at 1261 feet sub-sea, or 98 feet below the offset, and establishes proof that the water table within the field proper is not constant. This completion will require three offets.

Magnolia Petroleum Company's State 1-R, diagonal offset to completed wells, established a new potential record for the Lovington area in gauging 301 barrels of 34-gravity oil natural on 9-hour test through 52/64-inch choke. This well was drilled to 4960 feet, or 1128 feet below sea level. United Producing Company's Caylor 1, south offset to the most easterly producer, flowed 158 barrels oil in 11 hours natural at 4942 feet, and will be acidized. Contract has been awarded by the Texas-New Mexico Pipe Line Company to build a 16-mile 5½-inch extension line from Monument to this new pool.

Chaves County's prospective deep lime strike by Hightower et al's Billingslea 1, C SW NE 28-11s-30e, developed water trouble after re-acidizing broken saturated zone at 3375-3430 feet. The hole was plugged back from 3445 feet on account of water. The well was rated at 35 barrels of oil daily on a swabbing test after first acid. Water broke through after the second treatment and the wildcat swabbed 6 barrels of fluid hourly, estimated 80 to 90 percent BS&W.

Reduced field activity in recent weeks is being reflected by the drilling report on Lea County. Five new operations were authorized the past week as compared to 4 the previous week when a record low level for the year was reached.

Vacuum field accounted for 2 projects, involving Drilling & Exploration Company's State-Shell 1-C, C W½ SE SE 24-17s-34e, and Humble Oil & Refining Company's State 6-K, C SE SE 32-17s-35e. The Texas Company's State 3-N, an inside location, proved a small well in flowing 89 barrels of oil in 19 hours after using an aggregate of 10,000 gallons of acid at 4750 feet.

A south extension to Maljamar field is to be sought by Paul Love et al's Pearsall 3, C NW NW 33-17s-32e.

In the Langlie field, Parker Drilling Company's State 1-B, C W½ NE NW 2-25s-37e, is on a farmout by Shell Oil Company.

Cable tools are being used by Weier Drilling Company on Woolworth 4, SE NW SW 28-24s-37e, a new project for the Mattix field.

New Mexico Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Eddy County—		
Hughes et al, Brooks 2, ne nw nw 19-17s-28e	*	606
Lea County (Langlie)—		
Cities Service, Dabbs 2, sw sw nw 23-25s-37e	640	3360
Lea County (Lovington)—		
Magnolia, State 1-Q, c sw ne 36-16s-36e	160	5110
State 1-R, c nw se 1-17s-36e	800	4960
Lea County (Mattix)—		
Amerada, Johnson 2, c sw sw 27-24s-37e	528	3493
Lea County (Vacuum)—		
Drl. & Explo. Co., Inc., State-Shell 1-W, nw nw se 26-17s-35e	1225	4585
Humble, State 5-K, c se ne 32-17s-35e	492	4660
Phillips, State-Hale 2, c nw se 35-17s-34e	600	4699
State Santa Fe 29, c sw nw 33-17s-35e	720	4624
Shell, State 2-N, c se ne 28-17s-35e	439	4660
State 1-T, c ne se 33-17s-35e	1368	4640

* Failures; † Junked; ¶ Million cu. ft. gas.

Lease play gains headway in northeastern Arizona

Phoenix, Ariz.—Apache and Navajo counties were the center of Arizona activity last week as a major company completed a seismograph survey of several areas near St. Johns and Rincon Oil Syndicate formed a block of acreage and spudded a new location in Section 28-13n-27e, about five miles west of St. Johns in Apache County.

Several blocks are being formed south of the Rio Puerco, near Pinta, and at the edge of the Petrified Forest. A large portion of the 112,000-acre Jamison Ranch was reported as under lease. Another large block has been formed on a surface structure southwest of Holbrook.

Most of the companies are acquiring blocks from patented land owners in return for drilling contracts, with time limit of one year, after which rentals go into effect. The new lease form for use on state lands is in process of preparation and will soon be available.

Contract has been let for 4500 feet on Peoples Oil & Gas Gardner 1, Section 2-1n-3e, a few miles east of Phoenix on U. S. Highway 89.

Samuel F. Reaves' Fuqua 1 has been converted to light rotary with electric driven slush pump and is drilling ahead at 1100. The well is on Section 34-1n-4w, Maricopa County.

Roy W. Schenk et al's Boyce 1, Section 22-19s-17e, near Soniata, Pima County, is drilling below 400 feet. This well is 6 miles west of the Klene Anticline described in THE OIL WEEKLY of May 22 by Donald McKay, and is testing the Upper Cretaceous section described in McKay's article.

West Texas Fields

Gaines County wildcat may produce from Permian.

Output of Bennett extension less than expected.

Midland, Texas.—Structural position recorded by Humble Oil & Refining Company's W. T. Caswell 1, C SW SW PSL Section 10, Block A-24, south central Gaines County wildcat, affords sufficient relief to obtain production in the regular Permian lime horizon. Seven-inch pipe was slated to be landed late last week at 4370 feet. Top of the brown lime was called at 3840 feet, with an elevation of 3344 feet, or 91 feet higher than Finley-Cherry et al's Dalmont 1, located 1⅛ miles northeast. The latter logged sufficient saturation to warrant a nitro shot at 4702-83 feet, but proved a failure after deepening to water at 4923 feet.

Two Tests Planned

George M. Shelton and associates are reported lining up acreage and dry hole contributions to drill a test about 11 miles northwest of the Caswell prospect. Location may be assigned to the NE Section 432, Block G, on a tract contributed by Gulf Oil Corporation. Stanolind Oil & Gas Company is credited with having authorized a test for its Cedar Lake geophysical prospect in northeastern Gaines County, although location has not been made public. All available leases in the area have been acquired by substantial interests, and royalty has commanded big prices.

Shell Petroleum Corporation's Waples-Platter 1, 2-mile northeast extension for the Bennett field, Yoakum County, was pumping 110 barrels of fluid, 26 percent BS&W, daily last mid-week. It is a smaller producer than anticipated. The well was drilled to sulphur water in April at 5373-80 feet, then acidized after plugging back to 5312 feet.

Building Recycling Plant

Temporary halt has been made by Magnolia Petroleum Company in the development of its 8000-acre J. B. Walton lease, embracing portions of the Kermit, Scarborough and Keystone fields, Winkler County, after drilling 251 tests to the 3000-3300-foot oil and gas pay. In recent years the company has maintained 4 to 6 rigs in continuous service. Total of 97 wells were completed last year, and 28 have been added this year. The company is starting work on a $200,000 gas recycling and repressuring unit on its Walton leasehold, and will utilize its rigs in carrying on extensive well conditioning operations. Its last completion was Walton 232, near SEc NE PSL Section 36, Block 74, rated at 666 barrels initial after nitro shot at 3270 feet.

Two lease farmouts by majors will pave the way for more drilling in Winkler County. Continental Oil Company assigned Sam Weiner et al lease on NW PSL Section 12, Block 77, Keystone area, retaining ⅛ over-riding royalty and mineral rights below 4000 feet. In the south portion of Kermit field, Sturm-Nolan Drilling Company was given lease on the N½ SE PSL Section 38, Block B-5, by Sinclair Prairie Oil Company, which reserved ⅛ over-riding royalty and drilling rights below 3250 feet.

A new depth record for the North Cowden field, Ector County, likely will be recorded by Gulf Oil Corporation's Holt 1, half-mile west of production, in search of production in the lower Permian. It was drilling at 4883 feet in broken lime. Sun Oil Company's Holt 1, located 2 miles north by west, encountered saturated lime at 4815-23 feet and 4942-61 feet, but failed to make a producer from the deep lime.

Running High

J. T. Barnes, Conkling and White's E. R. Thomas 1, near NEc SW NW T&P Section 28, Block 45, T-1-S, Ector County wildcat, is changing to cable tools after landing 7-inch pipe at 3848 feet. It is structurally high for the area, having logged top of Yates at 2710 feet, with an elevation of 3277 feet.

Magnolia Petroleum Company is rigging up rotary to drill J. B. Fry 1, NW NW SE T&P Section 8, Block 35, T-4-N, to test a short term wildcat block in Dawson County. Location is 9 miles southeast of Lamesa. Ray Albaugh et al's D. Hogg 1, C SE SE T&P Section 17, Block 34, T-4-N, also a wildcat in Dawson County, is awaiting orders at 4125 feet after drilling by tools.

Pecos County's recent Ellenberger lime discovery near the Masterson shallow pool has remained shut in for pipe line connection since May 14. Anderson-Prichard Oil Corporation and Monte Warner's Masterson 1 opened the deep zone at 4555-95 feet with a natural flow rated at 150 to 200 barrels daily. The owners have petitioned the railroad commission to apportion production allowables on an acreage basis so as to discourage close spacing of wells. This strike caused a number of shallow prospects to be started in the general area where short term leases stand a chance of being perpetuated by Permian production.

Superior Oil Corporation's Crockett-Skelly 1, T. C. Ry. Section 5, Block 110, a mile southwest of the Masterson shallow area, bailed 8 barrels of oil and 4 barrels of water in 24 hours. Oil pay was logged at 1439-50 feet, with water showing at 1456-59 feet. Skelly Oil Company retained the deep rights in making this farmout. Gulf Oil Corporation has assigned shallow rights on the west quarter of H&GN Section 90, Block 10, to R. G. Patillo et al, retaining an over-riding royalty and mineral rights below 2500 feet. Patillo et al have started operations on W. T. Gilworth-Gulf 1, located 330 feet from northwest and southwest lines of the tract.

Failure in Page

Lone Star Gas Company's 3-well drilling program in the Page gas-distillate area, Schleicher County, accounted for a failure when Bert Page-Humble 2, C SE SW GH&SA Section 46, Block L, found salt water in the Strawn at 5773-95 feet after checking low on structure.

West Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Means)—		
Humble, Means 61	1692	4500
Crane County (Dunes)—		
Great Western Prod., Inc., University-Texas Co. 2-A	726	3300
Crane County (McCamey)—		
Parker Drl. Co., King Ranch-Texas Co. 2	408	2145
Crane County (Gulf-Waddell)—		
Gulf, Henderson 17	7536	3531
Crockett County (Crockett)—		
Gilcrease Oil Co., University-Humble 8-16	22	1400
Ector County (Foster)—		
Broderick & Calvert, Foster 17	1328	4185
Ector County (Goldsmith)—		
Cities Service, Cummins 6-D	836	4235
Gulf, Goldsmith 187	121	4231
Goldsmith 188	1056	4211
Goldsmith 189	2352	4168
Ector County (Jordan)—		
Gulf, W. E. Connell 17-B	220	3680
Ector County (North Cowden)—		
Atlantic, Cochran 2	163	4259
Ector County (Wildcat)—		
Richardson et al, T. P. Land Trust 1	*	1643
Gaines County (Seminole)—		
Atlantic & Osage Drl. Co., Tippett 2	970	5260
Gaines County (Wasson)—		
Continental, Wasson 3-51	837	4990
Wasson 4-52	567	4991
Gaines County (Wildcat)—		
Osage Drl. Co.-A. S. Everts, E. H. Jones 1	*	5146
Hockley County—		
Texas Co., Mallet 1-C	552	5050
Howard County—		
F. W. Merrick-Murphy & Lamb, Chalk 8-B	648	2938
Moore Bros. Corp., O'Daniel 8-A	277	2812
Jones County—		
Dennis et al, Wooten 1	†	1765
Petroleum Prod. Co., Steffens 3	588	1866
Quality Prod. Co., McConnell 1	*	2364
Pecos County (Payton)—		
British-American, Payton 19	251	2083
Pecos County (Taylor-Link)—		
Landreth Prod. Corp., University 4-H	125	1649
Pecos County (Pecos Valley)—		
Arnold Oil Co., H. J. Eaton 4	*	1663
Trumis & Schkade, Gray 1-A	*	1419
Union O&M Co., Magnolia-Lessenich 4-D	270	1852
Yadon et al, Jackson 2	52	1621
Pecos County (White-Baker)—		
Cardinal, White-Baker 2-B-45	270	1752
Scurry County (Sharon)—		
Coffield & Guthrie, 1st Nat'l Bank (Snyder) 1	120	3184
Stonewall County (Wildcat)—		
Forest Dev. Corp. et al, Boyd 1	187	4760
Upton County (McCamey)—		
Sahara Oil Corp., Baker-Republic 10	250	2270
Shell, Baker 10	280	2243
T. P. Coal & Oil Co., J. F. Lane 34-A	257	2128
Ward County—		
Gulf, Hutchings 123	359	2780
W. P. Luse & Ice, Blair 8	190	2093
Magnolia, Sealy 4-45	195	2834
Winkler County (Kermit)—		
Magnolia, Walton 230	228	3270
Walton 231	173	3259
Walton 232	666	3270
Winkler County (Keystone)—		
Gulf, Keystone 31	262	3441
Winkler County (Scarborough)—		
Gulf, Daugherty 70	86	3025
Yoakum County (Wasson)—		
Aloco Oil Co., Johnson-Texas Co. 1	712	5175

* Failures; † Junked; ¶ Million cu. ft. gas.

Texas Panhandle Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
Magnolia, Fee (244) 54	406	3155
Hutchinson County—		
Alexander et al, Moore-Langdon 2	154	3095
Stansylvania Oil Co., Wisdom 7	457	3073
Wisdom 8	454	3048
Whittington Est. & Rubin, Whittenburg 3	¶15.8	3092
Wheeler County—		
Magnolia, Perkins-Cullum 1-C	337	2468

* Failures; † Junked; ¶ Million cu. ft. gas.

North Texas Fields

Nocona test to determine thickness of Strawn pay. Caddo lime yields oil near Loving; K-M-A extended.

Wichita Falls.—Thickness of the Strawn oil horizon and the possibility of a deeper producing level will be established in the Nocona pool, Montague County, by Rogers and Rogers' C. W. Astley 1, north offset to their discovery producer. The completion of a producer from the regular pay was assured when formation tester used on oil sand at 4650-64 feet yielded 650 feet of oil and 100 feet of drilling fluid in 30 minutes. Astley 1 was drilling lime formation at 4907 feet, according to late reports. Hard non-porous black lime topped at 4832 feet is believed to be below the Strawn section. It is on a 150-acre lease farmed out by The Texas Company. Stanolind Oil & Gas Company's Zachary 1, west offset to the discovery, was drilling at 2600 feet.

Bridwell Oil Company et al's Reynolds 1, mile northeast of Nocona, was drilling at 3820 feet. It is credited with checking low on the shallow geological markers. Sinclair Prairie Oil Company is moving in materials to drill a scheduled 5500-foot test 2 miles east of Nocona on the Gould Whaley (was Mrs. A. Jordan) tract.

Preliminary production test given the Shell Oil Company's W. A. Davis 1, which is seeking a well from a lower lime zone in the Burns pool, western Clay County, failed to yield oil or gas after bailing 12 hours. Davis 1, south offset to the discovery, failed to produce in the 4461-foot Strawn and logged favorable saturation in deepening to 5100 feet. Seven-inch pipe was cemented at 4923 feet.

Shell Oil Company is the most aggressive major in acquiring wildcat leases and protection acreage against projected deep lime tests in Clay County. Shell Pipe Line Corporation's West Texas-Oklahoma 10-inch trunk line crosses the county and can be pressed into service to supply Shell Oil Company's middlewestern refineries with high gravity oil from North Texas. Shell paid $25 cash per acre for a wildcat block in southwestern Clay County, centering upon the G. R. Meade, Comanche Irrigation and HT&B Ry. Surveys, with an obligation to start a deep test by August 1.

Eastern Young County offered a probable deep lime strike when Bryson Oil & Gas Company, Leidecker et al's J. M. Nall 1, SWc Section 1997, TE&L Company Survey, ½ mile west of Loving began filling with oil from broken Caddo formation at 4342-4460 feet. A string of 5-3/16-inch pipe has been run for production test. Nall 1 is 4 miles northwest of nearest deep production.

British-American Oil Producing Company is not meeting with success in making producers from two tests on its Seymour block, eastern Baylor County, after plugging back to saturated zones passed up in fulfilling depth contracts. Green 1-L, near SE NW SE H&TB Section 8, was awaiting orders after swabbing 30 barrels oil and 400 barrels of water daily. This well was plugged back from 4304 feet, and gun-perforated casing at 3060-80 feet. The large water yield followed treatment with 2000 gallons of acid. Cope 1 failed to respond to swabbing tests after gun-perforating casing at 2535-37 feet and 2808-15 feet. It was plugged back from 5598 feet to 2850 feet.

Consolidated Oil Company has paid a cash bonus for an extension on the starting date of a contracted Canyon lime test on the F. C. Green fee, T&NO Section 230.

Strawn Good at Walnut Bend

Walnut Bend pool, northeastern Cooke County, strengthened its position as being one of the most productive Strawn areas in North Texas when Sinclair Prairie Oil Company's J. M. Best 9, southwest edge location, flowed 1356 barrels of oil natural through tubing from sandy-lime at 4943-82 feet, with the well bottomed in shale at 4984 feet. The company's Best 8, which established a lower pay at 5143-71 feet, with shale to 5173 feet, plugged back to 4980 feet and then flowed 360 barrels of oil natural in 19 hours. The lower horizon indicated a yield of 200 barrels daily on swabbing tests. It registered 2400 pounds bottom hole pressure. Sinclair Prairie Oil Company plans to keep two rotary rigs running, and has constructed permanent roads since the purchase of the surface rights on in the Best tract. E. B. Cox and Jake Hamon's K. Neu 1, situated 660 feet east of Best 8 and on a farmout by The Texas Company, logged favorable oil saturation in the regular Strawn lime at 4902-41 feet, and was drilling lime and shale at 5005 feet to explore the lower pay before running pipe for completion.

British-American Oil Producing Company's T. B. Wilson 1, first Bend lime producer for Archer County, gauged 111 barrels of 43 gravity oil natural on 3-hour potential test through tubing for completion. Eight-inch pipe, cemented on bottom at 4739 feet, was gun-perforated with 64 shots at 4660-80 feet. Top of the lime was called at 4666 feet. The method of completion precludes the use of nitro, which usually boosts the potential of wells from this lime horizon.

G. E. Kadane & Sons' Joe Hemmi 1, NEc of Section 60, Block 3, Clark & Plumb Survey, 2 miles south of Scotland, is a prospective deep lime producer for eastern Archer County. This wildcat logged oil saturation below the Strawn series in drilling to 5314 feet. Pipe has been run to try for an oil completion in the lime topped at 5174 feet.

Extension Looms

A major extension for the K-M-A deep field, Wichita County, appeared probable when Hanlon-Buchanan, Inc.'s Fassett-Tuttle 1-F, SWc of Day Land & Cattle Co. Survey, A-596, halted in saturated lime at 4093 feet to run casing for a production test. It is 1½ miles east of nearest production on the north edge of the field, and 3½ miles southwest of Iowa Park. Top of the lime was called at 3905 feet, indicating low structural position, but oil saturation was noted in sand at 3917-20 feet, with a dry lime section at 3922-50 feet, then oil show in lime at 4061-93 feet. King Oil Company et al's Mitchell 4, Block 25, P. Castleman Survey, A-36, offsetting production, passed up nominal saturation in the regular horizon, and drilled to the Ellenberger limestone, which proved dry at 4108-22 feet. The test will be plugged back to try for a completion. Top of the lime was logged at 3628 feet.

The old Burkburnett district accounted for its largest completion in months when Magnolia Petroleum Company's Hugh Reilly 144, near most easternly NEc of L. C. Dennison Survey, A-55, pumped 321 barrels initial at 1374 feet.

North Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County—		
Huggins et al, Ford 17	5	1004
Stanford & Jackson, Ikard 1, sec 3	*	1052
Taylor et al, DeMoss 1, sec 2	*	1033
Clay County—		
Harvey Drl. Co., Hull 1, blk 12	*	1450
Kimmel-Lee & Co. et al, Firestone 16, sec 23	200	1144
Perkins-Cullum et al, Taylor 2, blk 36	*	1375
Sussex Oil Corp., Shumake 19, blk 4	11	401
Tanner et al, Rigsby-Texas Co. 8, blk 2	5	241
Clay County (Wildcat)—		
Moss et al, Permley 1, blk 65	*	4055
Cooke County—		
Pace Pet. Corp., Aldridge 16	50	1207
Schermerhorn Oil Corp., Kessler 23, blk 5	20	1375
Staniforth et al, Voth 2	215	1717
Whitfield-Pearson-Grimes, Voth 6	111	1856
Jack County—		
Danciger, Ivey 9	546	3189
Sullivan et al, Swasey 6	5	374
Swasey 7	3	373
Jack County (Wildcat)—		
Welch-Hill et al, G. T. Griffith 1	*	487
Throckmorton County—		
Knox et al, McKeichan 1	*	765
Payne & Patterson, McKeichan 1	*	881
Wichita County (K-M-A)—		
Deep Oil Dev. Co., Bradley 4	688	3775
Fain-McGaha, Griffin 9-B, blk 3	960	3834
Panhandle Ref. Co., Stone 8-A	195	3830
Wichita County—		
Ahern et al, O. F. Bailey 2	12	564
Magnolia, Reilly 144	321	1374
Wilbarger County—		
King Oil Co. et al, Castleberry 5, sec 68	536	2646
Phillips, Shive 3, sec 79	528	3211
Young County—		
Atchley et al, Edwards 1, sec 3401	*	992
Cosden, Sewell 2	150	3935
Loftin et al, Y. Swain 1, sec 1465	*	755
Sparks & Hansen, Hamilton 4-A, sec 3401	*	925

* Failures; † Junked; ¶ Million cu. ft. gas.

Eastland County gets new pool south of Carbon

Ranger, Texas.—Southeastern Eastland County added a Caddo lime pool when Dobbs Oil Corporation's W. J. Greer 1, NWc of J. E. Hardy Survey and 2½ miles south of Carbon, developed hole full of 40.3-gravity oil after a 100-quart nitro shot at 2620-60 feet. Top of Caddo was logged at 2567 feet. The hole was bridged back from 3131 feet to 2665 feet. The well was scheduled to be acidized late last week to stimulate the gas yield, and possibly make a flowing well. Greer 1 is 2½ miles northeast of nearest production. Development in the area has been somewhat dormant for more than a decade.

Amerada Petroleum Corporation's C. J. Kleiner 1, NEc of J. M. Cass Survey No. 57, Haskell County geophysical prospect, was awaiting plugging orders late last week after fullfilling depth contract at 5607 feet. No shows were encountered in the Pennsylvania series.

Southwest Texas Fields

First Robstown trend geophysical high to produce. Clara Driscoll field being extended mile south.

Corpus Christi.—The highly touted Robstown trend of Nueces County gained additional importance last week, as the first attempt to open an oil field on its series of geophysical highs promised to be successful. This sector has been the scene of an active leasing and geophysical program for months and the first test is located on the southmost of three pictures developed along this immediate trend.

Texas Conservative Oil Company's Minnie Bock 1, in the southern portion of the Southeast quarter of Section 55, Nueces County, and about 5½ miles southwest of Robstown, is preparing to drill plugs and perforated in oil sand at 3805-35 feet. The well is bottomed at 4050 feet with 7-inch pipe landed at 3859 feet. The well is on acreage farmed out by Sun Oil Company, and is two miles north of the Clara Driscoll field on a separate structure. The sand, however, compares with the 3800-foot zone productive in the Clara Driscoll field.

This well is in the southernmost portion of the Robstown play. Its discovery, however, has increased interest in the area and some acreage on this trend has commanded prices of $100 or more per acre.

More than one mile south of the Clara Driscoll field, a second 6500-foot producer is anticipated as an extension well prepared to drill plugs. Bottomed at 6803 feet, Ralph R. Ogden of Austin logged an oil sand in the 6500-foot bracket and set a string of casing on the lower portion of the hole. All records are lacking, but the well is known to have found an excellent sand section, corresponding closely to Wellington Oil Company of Delaware's deep producer to the northwest.

Seaboard Oil Corporation of Delaware was completing its discovery producer of the new North Luby field of Nueces County, also discovered as a result of geophysical operations. The well is John LaPrelle 1-A, located in Block 9, Roberts and White Subdivision about 1½ miles north of the Luby field. It drilled to 7440 feet, plugged back and was completed through perforations at 4347-54 feet where 36 shots had been made. The well flowed several barrels of pipe line oil per hour through small choke, but had been shut in for storage as the week closed.

Jim Wells County had one discovery producer in final stages of completion. On the Ben Bolt Prospect, Bridwell Oil Company's W. W. Smith 1, La-Trinidad Grant and 1½ miles southwest of Ben Bolt, was completed through perforations in sand at 5231-51 feet. No gauge was available, but the well was known to be flowing at the rate of at least 150 barrels per day through 5/32-inch choke.

Ike Howeth and Lewis Production Company's R. Adams 1, east offset to the discovery of the West Alfred field of Jim Wells County, is in final stage of completion in sand 4683-89 feet, showing for an excellent oil producer.

On the Mathis geophysical prospect in San Patricio County, Seaboard Oil Corporation of Delaware apparently has a failure on its second test. A. Persons 1, Block 29 of the Pauls subdivision of the Welder ranch, made a drill stem test at 5606-26 feet, where it recovered 60 feet of oil and mud with a good gas blow. A second test at 5602-26 feet recovered 360 feet of brackish water with good oil show under 42 pounds pressure. The well is bottomed at 5925 feet and is waiting on orders.

Housh Thompson's Broughton 1, in the Francitas field, Jackson County, flowed at the rate of 46 barrels of oil per day from perforations 7396-7400 feet to be the second producer in this crude sand. The flow was through 3/32-inch choke. Mills Bennett's outpost to the field showed salt water in several sands and was shut down.

Magnolia Petroleum Company provided another 1320-foot west extension to the West Ranch field of Jackson County with West 11-A, which recovered 2880 feet of pipe line oil and 60 feet of mud on a drill stem test at 5160 feet. Casing was set for completion.

New Balcones Fault pool in Bastrop County

San Antonio.—Balcones Fault zone was adding a new oil field in Bastrop County, the first for 1939, with V. A. Hughes & Company's O. B. Lentz 1, at the town of Redrock, bottomed at 2428 feet, and showing for a pumping producer of 80 to 100 barrels of 35 gravity oil per day.

This discovery is located 1521 feet from the northerly north line and 1125 feet from the easterly east line of a 158-acre tract in the Freeman Wilkinson Survey No. 21. It is producing from the Dale lime topped at 2306 feet. A series of Austin chalk and Serpentine was found between 2346 feet and the total depth at 2428 feet. Casing was landed at 2283 feet.

Marts and Beavan, Inc.'s Chiles 1, the McLaughlin survey, and near Sayersville in Bastrop County, tested sulphur water and oil from 3224 feet. The test showed for a possible producer, but the water broke in. Edwards limestone was topped at 3217 feet and casing was landed at the same level.

New Webb County Mirando sand field

Laredo.—Producing between 35 and 40 barrels of Mirando Type crude per day, Gordon Johnson's Mabel Adami 1, in the northeast corner of Webb County, has opened a new Mirando sand oil field. The sand was encountered at 992-999 feet and casing was set at 989 feet. The well is located 660 feet out of the southeast corner of the Northwest Quarter of Section 345.

Two new fields are opened in Starr County

Mission.—Starr County gained the Rio Grande Valley's prominence with the discovery of a new shallow pool and the establishment of crude oil production two miles northeast of a present distillate area.

H. C. Bishop and J. O. Moss et al's S. B. Ricaby 1, 3325 feet north of the Ricaby pool and possibly on a separate sand lens, pumped 120 barrels of 21 gravity crude per day from a Frio oil sand at 1294-1305 feet to open the North Ricaby field. The area, on the basis of a new field, was granted 100 barrels per day allowable.

More important in discoveries was Transwestern Oil Company and Rowan & Hope's W. I. Cameron 1, Section 228, and two miles northeast of the Rincon field of Starr County. The test cored oil sand at 4154-73 feet, but drilled to 4178 feet. Perforations were made at 4160-70 feet with 40 shots and the well flowed 145 barrels of 41.4 gravity pipe line oil in 24 hours through 11/64-inch choke. Pressures were 365 pounds on tubing and 610 pounds on casing.

Magnolia Petroleum Company's Garcia 1, 2 miles northeast of the Bar-

East Texas Fields

Panola County wildcat to plug back and retest

Shreveport.—Paul Pewitt's Rushing 1, Mannan Smith Survey, Panola County, Texas, wildcat, showed salt water and a small trace of oil when tested following perforation of casing from 5087-91 feet in the Glen Rose lime. The hole will be plugged back and another test made.

A south outpost in the Joaquin gas-distillate field in Shelby County, McDaniels and Associates' McDaniels 1, William Snyder Survey, after drilling to 6225 feet in Travis Peak, which had no showing, is arranging to perforate casing at the 5000-5050-foot level for a test of the Glen Rose.

Red Iron Drilling Company has derrick up for a 4000-foot wildcat southwest of Atlanta in Cass County, this being Spearman 1, near center Samuel Burnham Survey.

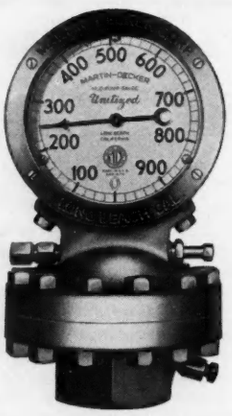
East Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Hunt Oil Co., Fair 21-B (138½-ac)	3600	3692
Kilgore Area—		
Carter et al, Clary 9	360	3540
Franklin County (Talco)—		
Magnolia & Humble, Maxton 12 (326½-ac)	214	4281
Nathan Pipe & Supply Co., Strickland 3	174	4313
Leon County (Navarro Crossing)—		
Humble & Sun, Harris 1	¶53	5917
Smith County (Wildcat)—		
Lane Wells Co., City of Lindale 1 (water well)	*	1541

* Failures; † Junked; ¶ Million cu. ft. gas.

Another **MARTIN-DECKER DEVELOPMENT**

The Slim-Hole Weight Indicator



The 1,000 lb. Unitized Mud Pump Gauge

2 NEW Instruments for slim-hole drilling

Here are **two** brand new Martin-Decker Instruments—both portable and both especially built for shallow drilling operations! Light, compact and extremely accurate, they provide a positive means of controlling weight and mud pump pressure on short-time jobs not requiring a written record of drilling progress.

THE SLIM-HOLE WEIGHT INDICATOR gives accurate indications of weight up to 150,000 pounds. It features a built-in diaphragm unit . . . a new type self-adjusting "C" clamp for all lines from 5/8" to 1¼" diameter . . . and five interchangeable dials calibrated on both sides for all commonly used string-ups. It is rugged, sensitive and precision-built to give uninterrupted service on well after well at low cost.

THE 1,000 POUND UNITIZED MUD PUMP GAUGE indicates on a large, easily-read dial all variations in pressures up to 1000 pounds. Readings are distributed over 360° of dial circumference . . . large numerals give full visibility from a distance of more than 40 feet . . . and the built-in Pulsation Damper smooths the gauge hand movements and assures accurate readings. It's easy to install and remove, requires no attention while in use and insures efficient mud pressure control in all shallow drilling operations.

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bacoas field and in Section 90 of Starr County, set casing at 6465 feet and was to drill ahead. It is bottomed at 6567 feet, having had an attempted blowout above that level.

Several miles to the south of the above well, Whitfield and Souther have abandoned Carruth et al 1, at slightly below 3000 feet, failing to find production above that level. Several important gas shows were encountered.

Blanchard hearing

A hearing to fix operating rules for the new Blanchard field, Duval County, has been scheduled by the Texas Railroad Commission for June 5, in Austin.

South Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CORPUS CHRISTI DISTRICT		
Brooks County—		
Humble, McGill 6 (Kelsey)	*	4795
Hidalgo County—		
Rowan & Hope, Bazan 1 (WC) San Ramon gr	*	7508
Jackson County—		
Crosby, Kopnicky 1 (WC) Francitas	150	7967
Porter, Drushel 7 (Cordelle)	300	2752
Yaussi 2 (1-A) (Cordelle)	75	3612
Jim Wells County—		
Henshaw, Inglott 2 (East Alice)	18	5403
Parr, Hoffman 1 (WC) Camada	60	5826
Texas Gulf, Perez 1 (WC) Manuel Barrera sur	*	6862
Live Oak County—		
Hotchkin, Hamilton 1 (WC) H&GN sur 3	*	2230
Shield, Adams 1 (WC) sec 58	*	2343
Nueces County—		
Bryant, Galvan 3 (Clara Driscoll)	450	5895
Killam, Webb 3 (Clara Driscoll)	*	6000
Killam - Reed & Cox, Holmes 1 (Clara Driscoll)	500	6580
Stanolind, Spessard 22 (Luby)	600	5062
Refugio County—		
Coronado, Yarrow 2 (La Rosa)	600	6350
San Patricio County—		
Graham & Waterbury, McCampbell 3-B (McCampbell)	1100	7159
Houston, Baldwin 5-A (East White Point)	¶10	5737
Nueces Royalty, Roper 1 (East White Point)	500	5677
Plymouth, Sparks 3 (East White Point)	450	5677
Welder 111-C (Plymouth)	650	5644
Rantex, Wheeler and Houghton's 1 (McCampbell)	1100	7177
Sinclair-Prairie, Womack 5 (East White Point)	500	5665
Victoria County—		
Barnsdall, McFaddin 29 (McFaddin)	500	4409
Transwestern, McFaddin A-5 (North McFaddin)	100	5320
LAREDO DISTRICT		
Duval County—		
Blanchard, Parr 1 (WC) T. C. Rogers sur 298	75	4715
Belcher, Mew 1 (Fitzsimmons)	500	4304
Continental, Collings 8 (Hoffman)	115	2680
Cuellar, Cuellar 4 (Hoffman)	250	2557
Humble, 4-E DCRC (Eagle Hill)	253	2120
Magnolia, DCRC 18 (291) (Casa Blanca)	*	1354
Navarro, Mew 1 (Fitzsimmons)	400	4321
McMullen County—		
Adams, Selman 1 (Campana)	*	3102
Starr County—		
Henninger, Guerra 2 (WC) blk 5, Conroe subd	*	950
Webb County—		
Schimmel, Laurel 2 (3) (North Killam)	86	2200
Superior, Frost & Wilson 2 (WC) sec 35	*	1960
Zapata County—		
Buffalo, Hinnant 9-A (Mirando Valley)	54	1997
Hinnant 7-C (Mirando Valley)	90	1995
Interstate, Lopez 6 (S. Mirando Valley)	110	1796
SAN ANTONIO DISTRICT		
Bexar County—		
Johnson Y. Gibbs, Caruthers 2 (Somerset)	10	1400
Caldwell County—		
Lincoln, Brown 6 (Branyon)	*	2133
Martell, Davis 1 (Salt Flats)	42	2725
Taylor, Dorn 6 (Luling)	66	2117
Guadalupe County—		
Camps, Malaer 5 (Darst Creek)	45	2616
Cities Service, Dowdy 7 (Darst Creek)	64	2620
Coffield, Wells 1 (WC) C. C. Carrier sur	*	3080
Trio, Jahns 1 (WC) J. K. Davis sur	*	3060
Wiegand Bros., Willie 2-A (Darst Creek)	56	2631

* Failures; † Junked; ¶ Million cu. ft. gas.

Texas Gulf Coast

Collegeport wildcat blows out, but is controlled.

Prison farm test reported flowing from Vicksburg.

Houston.—Continental Oil Company's Savage 1, a wildcat in the Collegeport area, D. Yeamans Survey, Matagorda County, attracted considerable attention last week when it blew out at 3845 feet and blew wild for one hour. It bridged at 1500 feet and was brought under control. Sands were reported logged at 3842 to 3845 feet. No oil was shown. The crew will clean the hole, weight mud, and core ahead. Continental Oil Company has drilled several wells at Citrus Grove, several miles northwest of the Savage 1. The wells at Citrus Grove gave considerable trouble with heaving shale.

Hamman Exploration Company's Darrington State Prison Farms 1, wildcat in Sandy Point area, Brazoria County, was reported flowing an estimated 25 barrels of 39-gravity oil per hour from Vicksburg formation. It is generally believed that the well is flowing from about 8200 feet, but other reports state that it was tested about 8700 feet. The previous week a drill-stem test made around 8200 feet yielded 120 barrels of 39-gravity oil in 12 hours through a 3/16-inch choke. Tubing pressure was 120 pounds. The well shaled up and operators were forced to rework it.

Aldine Well Salty

The new Aldine field, Harris County, received a setback last week when Texas Gulf Producing Company's Hairgrove 1, first well in the area after the discovery well, cored salt water sands in the producing horizon. The test, 1500 feet southwest of the discovery well, is bottomed at 7071 feet in shale and shut down for orders. It probably will be abandoned. The discovery well, Weary 1, was completed in Yegua sand at 6824 to 6834 feet and is flowing pipe line oil. On geological markers, Hairgrove 1 ran normal with it. About 5000 feet northeast of the discovery well, Texas Gulf Producing Company's Heath 1, drilling in shale at 6250 feet, topped the Hockleyensis at 5520 feet. It is also about normal with the discovery well. Texas Gulf Producing Company is drilling at Aldine at a rapid pace. Hairgrove 1 was spudded May 13 and on May 25 it was down to 7071 feet.

Housh & Thompson et al have made location for Krey 1 in the Addicks area, Harris County. It is 466 feet out of the southeast corner of block 22 of the Meadowbrook Farms subdivision, about three miles southwest of Addicks. The wildcat is being drilled on a 160-acre tract farmed out to George Robinson by Shell Oil Company. It is contracted to 7800 feet, in the Yegua formation.

Flank Well Shows

H. M. Naylor's second well on the north flank of Thompson field, Ft. Bend County, in oil sand last week at 7768 feet, is reported to have topped the pay higher than the first well, which opened a new producing horizon for the field. Musselman 2, 600 feet west of Musselman 1, cored sand showing oil at 7720 to 7728 feet, sand and shale with an oil show from 7728 to 7748 feet, and broken sand, 50 percent sand, with an oil show at 7748 to 7768 feet. An electrical log was run.

On the northwest flank of Sugarland, Ft. Bend County, Atlatl Oil Company and Adams Oil & Gas Company's Stancliff 1, E. Alcorn Survey, was coring in shale below 5200 feet. Cores taken from 4969 to 6975 feet showed salt water with an odor of sulphur gas.

On the flank of Big Creek, Ft. Bend County, Gulf Oil Corporation abandoned Davis 77 at 8273 feet last week after making several attempts to extend the field and discover a new producing horizon. The well was tested up the hole. The last test, at 3478 feet, showed salt water. This well establishes a new depth record for the field.

About 4800 feet north of production at Withers, Wharton County, The Texas Company was coring Pierce Estate C-59, J. Caldwell Survey, after getting broken formations with oil shows in the regular Withers producing horizon. Cores taken at 5515 to 5585 feet consisted of thin streaks of sand and shale with odors of oil.

Texas Gulf Coast Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Anahuac—		
Humble, Zappe 15-X	631	7050
Big Creek—		
Gulf, Davis 77	*	8217
Boling—		
Mackhank Pet. Co., Farmber C-13.	¶1	4785
Caplen—		
Sun, Hudnell et al 1	667	7404
Cheek—		
Humble, Jefferson Land 4	189	7720
Dickinson—		
Bennett, Grey 2	¶25	8938
Coast Pet. Corp., M. Stewart 14	620	8912
Mar-Tex Oil Co., Stewart 11	590	8505
Esperson—		
General Crude, Fee 2-B	510	7015
Fairbanks—		
Amerada-Stanolind, Foley 4	114	6846
White 9	101	6846
Noble & Baker, J. H. Hillegeist 2.	126	6831
Smith & Owenby, White 9	143	6849
Union Prod. Co., Whitehead & Rash et al 5	149	6846
Hardin—		
Humble, Partlow 3-B	400	7587
Woodley, Barrett 1	*	8069
High Island—		
Stanolind, Cade B-5	*	6357
League City—		
Geo. Echols, Ross-Stewart 4	246	8702
Phillips, Lobit-Wilson 2, dr to 10,427 ft, pb and comp	81	8951
Louise—		
Gulf Stream, Whitside 5-A	325	5162
Manvel—		
Brown & Wheeler, Callihan 1	*	6517
Old Ocean—		
Harrison & Abercrombie, Chenault 4	300	10,418
Satsuma—		
Williams et al, Behne 2	392	6857
Silsbee—		
Republic, Geldard 1	206	6972
Thompsons—		
Humble, Davis 7	108	4345
Withers—		
Smith & McDannald, Hennessy-Dacon 1	55	5547
Texas Co., Pierce Estate B-30	303	5547
Ft. Bend County—		
Royal Oil & Gas Co. & Pat Rutherford, Bertrand 1, e of Richmond, J. Wilkens sur	*	6504
Montgomery County—		
O. C. Garvey, Foster Estate 1, Willis area, N. Martin sur	*	7041
Wharton County—		
Magnolia, Borden Estate 1, Mackey area, H. Griffith sur	*	6557

* Failures; † Junked; ¶ Million cu. ft. gas.

Two Running High

Two wildcats are reported running high on structure: Geo. Echols-Hebert & Smith's Fontenot 1 in the North Cheek area, Jefferson County, was drilling in shale at 6270 feet after topping the Discorbis at 5730 feet and will start coring for the Frio this week; Cockburn et al's Hamburger 1, two miles south of Glen Flora in Wharton County, was drilling at 5450 feet in shale and is reported to be 200 feet higher than other wells in the area.

R. L. Peveto et al's McWhorter 1, six miles southwest of Madisonville, Boatwright League, Madison County, was coring in shale last week at 2700 feet. It is reported that sand with an oil show was logged at 1158 to 1180 feet. Queen City was cored at 1190 to 1202 feet.

On the south flank of Manvel field, Brazoria County, Brown & Wheeler's Callihan 1, J. O'Donnell Survey, was abandoned last week at 6517 feet in shale. Salt water sands were cored at 5645-55 feet, 5710-20 feet and from 6270-75 feet.

H. E. Williams et al's second well north of Satsuma field, Harris County, was completed last week. Behne 2, W. C. R. R. Section 2, Block 1, flowed 392 barrels of pipe line oil daily after casing was perforated with 12 shots from 6838 to 6842 feet.

South of Hardin field, Liberty County, Woodley Petroleum Company abandoned Barrett 1, R. Coleman Survey, at 8067 feet after coring salt water sands in the Hardin producing zone. Sands were cored at 7690 to 7695 feet and from 7790 to 7795 feet.

Twenty-acre Aldine spacing advocated

Twenty acre spacing for wells in the new Aldine field, Harris County, was advocated at a hearing before the Texas Railroad Commission last week. Texas Gulf Producing Company and major operators in the field advocated this plan. The only protestant was Duncan Neblett, attorney for landowners in the area, who urged 10 acre spacing.

Proration would be on an acreage basis with a maximum of 30 acres assigned to the well, according to the plan submitted. No permit would be granted for a well on a tract smaller than 20 acres unless an effort had been made to pool with a contiguous tract.

Production in the field was found in nine feet of sand found between 6823 and 6832 feet in the Yegua. S. A. Judson, geologist for Texas Producing Company, estimated recovery at 5400 barrels per acre.

He estimated that wells in the field would cost about $40,000 and suggested that 20 acre spacing would be required to enable wells to be drilled profitably. This would mean an estimated recovery of 108,000 barrels per well.

Stanolind, Tide Water, Union Producing Company and Standard of Kansas also have leases in the area.

South Louisiana

St. Gabriel prospect looms as new 9050-foot field. Very thick sand body cored in Abbeville outpost.

Lake Charles.—Shell Oil Company's Natalbany 1, St. Gabriel area, Iberville Parish, indicated it would open a new oil field last week. After drilling to 10,542 feet the test was plugged back and perforated with 12 shots at 9050 to 9053 feet. A drill-stem test showed six stands of mud and water and 42 stands of oil after acidizing. Tubing, 2½-inch, was hung at 8827 feet.

Bel Oil Company is preparing to make another test on Bel Estate 1, wildcat on North Elton prospect, Allen Parish. Last week the company perforated casing with 24 shots from 6041 to 6050 feet; made a 45-minute drill-stem test, and recovered 3 stands of 31-gravity oil, 15 stands of gas, oil and salt water, and four stands of salt water with a trace of oil. The perforations have been squeezed with cement. The coming week the crew will perforate above 6050 feet.

A mile north of production at Abbeville field, Vermilion Parish, Continental Oil Company is reported to have cored three good oil sands in Duhon 1. The best oil sand, 130 feet thick, was cored from 10,320 to 10,450 feet. The hole is being drilled deeper to explore lower horizon. The total oil sand cored in the extension well was over 200 feet; some of this apparently has not been produced from in the field proper. Gas sand was reported at 9580 and also at 10,081 feet. Seven-inch casing was set at 10,316 feet.

Eola Extended

Eola field, Avoyelles Parish, was extended ¼ mile east last week when Sun Oil Company completed Townsend 1 after casing was perforated with 96 shots from 8554 to 8566 feet. The well came in flowing 150 barrels of pipe line oil daily through a ⅛-inch choke with a tubing pressure of 1575 pounds and a casing pressure of 1675 pounds.

Baton Rouge field, East Baton Rouge Parish, was extended north last week when Lisbon-New Iberia Oil Company completed Duplantier A-1 for 440 barrels of 35.7-gravity oil daily through a 3/16-inch choke. Tubing pressure was 950 pounds; casing pressure, 650 pounds. One of the best wells yet completed at Baton Rouge, it is the highest on structure also. It is on a farm-out from Superior Oil Company. William Helis is preparing to work over Duplantier 1, which Superior Oil Company abandoned below 10,000 feet. This was the first well drilled on the prospect; it showed some oil on drill-stem tests.

Second Deep Completion Due

The second well to be completed in the deeper sand at Jennings field, Acadia Parish, probably will be Glassel & McFarland 7. The hole is bottomed at 8574 feet in oil sand, topped at 8534 feet. Six-inch casing was set at 8567 feet. Superior Oil Company discovered the sand.

Shell Oil Company has encountered trouble with Hanszen 1, 1900 feet east of the discovery well at Chalkley, Cameron Parish. Operators were planning a production test of a new sand at 9038 to 9051 feet when a fishing job developed around 6450 feet. Six hundred feet of seven-inch casing was set at 9500 feet.

The California Company's second wildcat in South Louisiana, Long Bell Lumber Company 1, Beauregard Parish, cored salt water sands in the Cockfield last week at 6949 to 6979 feet. The hole, down to 7829 feet at the end of the week, will be carried to the Wilcox.

Humble Oil & Refining Company is drilling below 4315 feet in Devilbiss 6 on the south flank of Roanoke field, Jefferson Davis Parish; it was perforated at 4194 to 4197 feet and salt water was swabbed.

About 8000 feet southwest of production at Chacahoula field, Lafourche Parish, Sun Oil Company made location for Cypress 1, 150 feet south and 1000 feet west of the northeast corner of Section 75-15s-15e.

The Texas Company has completed another deep well at Bateman Lake field, St. Mary Parish. Wax Bayou 2 flowed 324 barrels of 35.4-gravity oil daily through a 10/64-inch choke with

South Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Bateman Lake—		
Texas Co. Wax Bayou 2	324	10,903
Chacahoula—		
Sun, Dodge 1	*	3222
Charenton—		
Pan American Prod. Co., Veedor 13	215	2587
St. Mary Oil Co., Hertel 2	9	1199
Darrow—		
Humble, Community 21	*	6723
East Hackberry—		
Union Sulphur, Doiron 13	*	5221
Eola—		
Sid Richardson, Haas 4	460	8525
Sun Oil Co., Townsend 1	150	8566
Jennings—		
Shell, Community 6	257	7196
New Iberia—		
Texas Co., Duhe 9	157	3789
North Crowley—		
Humble, Davis 1	612	8180
Port Barre—		
Y. D. Spell, Gaudet 4	*	4700
Starks—		
J. R. Turnbull, Industrial Lbr. Co. 6	*	1929
Villa Platte—		
Continental, Ed. Tate 3 (wo)	280	8971
Vinton—		
R. & R. Oil Co., Vincent 2	*	55
Acadia Parish—		
T. G. Markley, Vincent 1, Trilby area, 19-7s-1w	*	9040
Iberville Parish—		
Humble, Iberville Mortgage Co. 1, Bayou des Glaise, 74-7s-10e	*	10,025

* Failures; † Junked; ¶ Million cu. ft. gas.

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New Iberia—Monroe.
Cotton Valley—Greggton
Magnolia—Houston

a tubing pressure of 1935 pounds. The well logged oil sands from 10,891 to 10,903 feet.

Cankton field, St. Landry Parish, which has been inactive for some time, will receive a test soon: Adams Oil & Gas Company's Babineaux 1 has been staked 414 feet from the west line and 464 feet from the south line of the tract in Section 39-8s-4e.

Arkansas authorizes 7 permits for new wells

El Dorado, Ark.—Seven drilling permits were authorized last week by the Arkansas Oil and Gas Commission, as follows: Columbia County—G. H. Vaughn, D. B. Baker 2, C NE SE 15-17-20; Atlantic Refining Company, J. A. Foster 1, C NW NE 24-17-20; Phillips Petroleum Company, J. Joiner 1, 660 feet N & W SEc NE 22-17-20; Arkansas Fuel Oil Company, Glasgow-Crisp 1, C NE SW 23-17-20; Nevada County—Benedum & Trees Oil Company, Grove Land & Timber Company 11, located 150 feet north and 330 feet east SWc NW NW NW 10-14-20; Union County — Phillips Petroleum Company, H. P. Sewell 9, located 330 feet N & E SWc NW 7-18-17; E. G. Bradham and Anthony Brothers, M. H. Nash 2, C SW NE SW 7-17-13.

Forty-acre spacing sought for Apco

Forty-acre spacing for wells in the new Apco field, Pecos County, was requested by Anderson-Prichard Oil Corporation at a hearing before the Texas Railroad Commission last week. There is only one well in the field, the company's No. 1 Masterson, which is producing from the Ordovician at about 4595 feet. Initial production was approximately 200 barrels.

R. W. Brauchli, geologist for Anderson-Prichard, estimated that the field would include the following area:

Sections 68, 75, 76, 83, 84, 96, to 112, inclusive, in Block 10, H&GN Ry. Survey; Section 4, Block 605, Louisa Merchant Survey; Sections 5 and 6, Block 110, T. C. Ry. Survey; Section 36, Block 140, T. & St. L. Survey; Section 1, Block 141, T. & St. L. Survey. The discovery well is located in the center of the SW¼ NE¼ Section 104, Block 10, H&GN Ry. Survey, Pecos County.

Federal Power Commission amends provisional rules

The Federal Power Commission last week announced an order amending its provisional rules and regulations under the natural gas act governing intervening petitions. The order provides that any interested state, state commission, municipality or any representative of interested consumers or security holders; any competitor of a party in a pending proceeding or any other person whose participation may be in the public interest may petition to any proceeding pending before the commission.

P. ROSSI, V. L. Rossi and C. W. Rossi last week organized the Rossi Drilling Company as an Illinois firm with headquarters in Salem, Marion County.

North Louisiana Fields

May open Lower Marine gas sand at Lake Bisteneau.

Outpost northwest of Shreveport to set casing soon.

Shreveport.—Possibility of opening the lower Marine horizon in the Lake Bisteneau field, Bienville Parish, which now has four basal Glen Rose lime gas wells, was seen last week as Arkansas Fuel Oil Company's Gayoso 2, C SW SE 14-16n-10w, made some gas with wash water as it tested May 25 after casing was perforated with 120 shots from 8285-8314 feet. Total depth is 8319 feet.

With an elevation of 188 feet this test logged Nacatoch at 983 feet, Buckrange at 1708 feet, the massive anhydrite from 3898 to 4135 feet, the Jeter sand at 4262 feet, the Pettet (basal Glen Rose) lime at 5043 feet, Travis Peak at 5432 feet, and lower Marine at 7850 feet. A small gas and distillate showing was logged at 8139-60 feet.

Shreveport field added four new wells during the last week to bring the total oil wells here to 37. Three of the week's wells were operations of R. E. Allison, discoverer of the field, whose holdings are being inventoried by Gulf Refining Company.

Shreveport Outpost to Test

Northwest of Shreveport production 1½ miles, J. Thomas Driscoll's Woolworth 1, NE SE 19-18n-14w, soon will have a production string of casing set, but operators were never able to get electrical logging device lower than nine feet off bottom. Total depth is 5608 feet. Five miles northeast of Shreveport production, Harry Hanbury's Leonard 1, NE NE 19-19n-13w, Bossier Parish, drilled below 5060 feet after logging base of massive anhydrite at a sub-sea depth of 4427 feet, 111 feet higher than the Shreveport discovery well. The anhydrite's thickness in this wildcat was 257 feet as compared to about an average thickness of 260 feet in the Shreveport field proper.

H. L. Hunt, who recently acquired the other half interest in the three Glen Rose gas distillate wells and the surrounding acreage in the Bear Creek district, Bienville Parish, from Seaboard Oil Corporation, has derrick up for another test, the first in over a year in this district. The new test is T. A. Loe 1, C NE 2-16n-6w.

Union Producing Company's Walker Unit 1, C SE 30-18n-8w, deep test in the Sibey district, Webster Parish, neared the 10,000-foot level last week as it drilled hard sand and shale May 25 at 9933 feet, still not having reached Lower Marine. Standard Oil Company of Louisiana and Joe Modisett's Frost Lumber Company B-1, SE SE 14-23n-2w, on a geophysical prospect in Union Parish, drilled red sand at 8085 feet.

Union Producing Company's Bienville School Board 1, SWc NE NE 16-16n-10w, Lake Bisteneau area, Bienville Parish, continued testing basal Glen Rose lime after using 6000 gallons of acid after the test showed estimated four million cubic feet of gas on first test. Casing was perforated at 5125-45 feet, at 5157-73 feet and at 5195-5215 feet.

Prairie River Syndicate is negotiating with other companies for assistance in drilling another Lower Marine wildcat test in south Caddo Parish on the block where it drilled a 9000-foot failure, Hutchinson 1, Section 15-15n-12w, last year. This test had several gas showings in Lower Marine.

Two failures, both outside tests, were abandoned last week in the newly opened shallow Vivian offshoot of the old Pine Island field, Caddo Parish.

North Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo Parish (Shreveport)—		
R. E. Allison, Ellerbe 8, 26-18-14	380	5559
Ellerbe 9, 26-18n-14w	528	5560
Ellerbe 10, 26-18n-14w	375	5556
Wardell Oil Company, Clark & Hutchinson 1, 26-18n-14w	528	5557
Caddo Parish (Pine Island-Vivian)—		
W. F. Bridewell, Huckabay 1, 19-22n-15w	*	2811
F. W. Martin & Co., Bailey 7, 29-22n-16w	*	2790
Webster Parish (Cotton Valley)—		
Ohio Oil Co., Bodcaw Lbr. Co. 5, Acct. 2, 13-21n-10w	504	8357

* Failures; † Junked; ¶ Million cu. ft. gas.

Louisiana issues 42 well drilling permits

Shreveport.—Forty-two drilling permits were issued last week by the Louisiana Conservation Commission of which 16 were in North Louisiana divided among the following parishes: Bienville, 2; Caddo, 12; Morehouse, 1, and Webster, 1. The twenty-six in South Louisiana were in the following parishes: LaFourche, 24; Jefferson Davis, 1, and Terrebonne, 1.

Schuler operators hire man to study recycling

El Dorado, Ark. — Representatives of companies operating in the Schuler field, Union County, Arkansas, at a meeting May 19 decided to retain the services of a petroleum engineer to work out a plan for re-cycling the field.

A committee to select this engineer consists of Charles H. Murphy of Jones, Murphy and Hurley; O. G. Murphy, Marine Oil Company; and Dr. J. S. Rushing, Alice-Sidney Oil Company. John Howell, vice president in charge of production for Lion Oil Refining Company, presided at the meeting.

From data submitted to the operators, it was indicated that recycling of the field would increase ultimate recovery from 15 to 18 million barrels, besides saving an estimated 10 cents per barrel in lifting costs.

Companies represented besides those mentioned included Crescent Drilling Company, Atlantic Refining Company and Phillips Petroleum Company.

Arkansas Fields

Three completions and six locations for Kerr-Lynn.

Two Permian lime wildcats fail to get saturation.

El Dorado, Ark.—Three new wells were completed in the Magnolia (Kerr-Lynn) field, Columbia County, Arkansas, last week and six new locations were announced as this field continued to maintain the lead in activity among Arkansas fields.

Having added their second Glen Rose oil producer in the new Stamps field, LaFayette County, East Texas Refining Company and Erwin & Leach made two new locations in that district, one of which has spudded. These operators are laying a four-inch line from their wells to Stamps, where a loading rack will be built.

J. K. Wadley and C. E. Johnson made location for a 4000-foot Paluxy sand test on a wildcat block they have in LaFayette and Miller counties. The new test is Jacobs 1, NW NE SE 33-18-26, Miller County. Wadley's G. W. Taylor 1, Section 15-19-26, LaFayette County, recently was abandoned as a failure at 6802 feet, after drilling to the Travis Peak. With elevation of 213 feet it topped Paluxy at 3750 feet.

Two Permian lime geophysical wildcat prospects in south Arkansas failed to pick up saturation in this horizon and probably will be abandoned. In Columbia County, northwest of Magnolia, Phillips Petroleum Company's Askew Unit 1, C NE NW 4-17-21, was arranging to run electrical log to 8510 feet after failing to log showings in the Permian topped at 8035 feet. Elevation is 287 feet. Top of lower Marine was 5920 feet. In Union County, Oliphant Oil Company's Union Sawmill Company 1, NW SW 22-19s-14w, was waiting orders at 7950 feet after failing to get a showing in the Permian lime topped at 7903 feet. Elevation is 158 feet.

In Columbia County north of Fomby where Freeman W. Burford, Skelly Oil Company and J. F. Magale have a block of acreage, Tide Water Associated Oil Company, Lion Oil Refining Company, and Root Petroleum Company are leasing in the upper part of Township 19, Range 19. At Spottville, where Standard Oil Company has a block of acreage, Marine Oil Company bought 40 acres in Section 32-17-18. Fohs Oil Company and McAlester Fuel Oil Company are checking with seismograph their 2000-acre block around Section 26-16-19. Phillips Petroleum Company is reported negotiating with Lion Oil Company to check the latter's 4000-acre block in Ouachita County around Section 30-15-17, and if the findings are favorable, Phillips proposes to drill a test for ½ interest.

Fohs Oil Company is reported planning to drill a second Permian lime test soon on a block in Union County centering around Section 5-18-14, on which first test to this horizon, while a failure, showed considerable oil. Atlantic Refining Company has had a seismograph unit working in this area intermittently for several months. East of Junction City, Union County, Ode Pepper is assembling a block around Section 34-19-15, where Stanolind Oil & Gas Company recently had a seismograph unit working.

Arkansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia County (Magnolia-Kerrlynn)—		
Hassie Hunt, Talley 1, 14-17-20 ...	936	7687
Shell Oil Co., Inc., Daisy Glasgow 2, 23-17-20	480	7708
Levi Garrett 1, 13-17-20	402	7667
La Fayette County (Stamps)—		
East Texas Ref. Co. et al, Bell Estate 1, 19-16-23	100	3477
Union County (Schuler)—		
Lion O. R. Co., First Nat. Bank 3, 13-18-18	1200	7695

• Failures; † Junked; ¶ Million cu. ft. gas.

Mississippi Fields

Two wildcat locations in northern part of state

Jackson, Miss.—Two wildcat locations, both in the northern part of the state, were made last week in Mississippi. Union Producing Company will drill a geophysical prospect at Mrs. Mattie Box 1, C SW 15-14n-4w, Humphreys County, 67 miles northwest of Jackson. Adams Oil & Gas Company will drill a 4000-foot wildcat in LaFayette County, Llewellyn 1, NE NW NW 9-10s-1w.

The location to be drilled by Adams Oil & Gas Company in LaFayette County, Mississippi, is on a block of approximately 40,000 acres secured recently from W. L. Stewart. In Jefferson County, south Mississippi, Gulf Refining Company is adding to a block in Township 8 north, Ranges 3 and 4 east. L. E. Ridgway is securing leases in Greene County, southeast Mississippi, in Township 3 north, Range 7 west. Union Producing Company has a seismograph unit in Clarke County, west Alabama, and also a similar unit in Yazoo County, Mississippi. Sun Oil Company recently moved two shallow core testing units to Lamar County, south Mississippi.

Georgia Busy

George E. Failing Company has spudded G. O. and E. L. Meadows 1, Montgomery County, Georgia, near Uvalda, and is drilling below 1500 feet. Donald Clark-Adams' McCaskill 1, Fourth Land District, Pierce County, Georgia, was recently abandoned in granite at 4350 feet after an electrical log was run to bottom.

J. H. Ware, Jr., Lake Charles, Louisiana, has secured a lease on 22,000 acres in St. Lucie County, Florida, from Robert H. Sanderson, most of the acreage being the St. Lucie Rod and Gun Club fee. Drilling must start within 12 months or a rental of ten cents per acre paid.

Michigan Fields

Bay County deep test plugging back to shallow sand.

Three Southwestern fields are receiving extensions.

Mt. Pleasant, Mich.—Possibility of a deep test below 6000 feet in Michigan this summer faded last week as Gulf Refining Company started to plug back from 4454 feet to a Monroe lime pay at 3550 feet for a new production test of the shallower zone. The plugback was ordered after a 5-week shut down at Bateson 1, SE SE 2-14n-4e, Monitor Township, Bay County, wildcat.

Bateson 1 topped Monroe at 3079 feet and had a good saturation zone at 3500 feet. Producing between casings, as the hole was carried deeper, the Monroe had been flowing from 10 to 20 barrels per day of high-sulphur oil. Sylvania lime-sand was topped at 3945 feet and showed saturation at 3995 feet. Test was still in Sylvania at 4454 feet when the plugback was ordered.

Extensions of three Michigan fields apparently were being established this week in Southwestern Michigan. Heinig-Nortons' Bunker 1, NE NW SE 5-6n-12w, Kent County, a half mile south of proven Traverse production in the Grandville pool, showed 1300 feet of oil in 5 hours at 1842 feet, after checking the formation at 1788 feet. Operators planned to acidize without deeper drilling.

In Allegan County, Gaylord W. Norton, Inc.'s Homrick 1, Section 1-4n-13w, a half mile northeast of proven production in the New Salem pool, filled up and flowed before the 5-inch casing string had been set. Test was cased at 1620 feet and shut down for drill in order this week.

K. & F. Development Company's Simmons 1, Section 3-1s-13w, Pine Grove Township, Van Buren County, wildcat, tested an oil saturation zone in Traverse lime at 1410-26 feet and ordered a 11-foot plug back for acid treatment after bottom water showed. This test is four miles northeast of the Gobles pool.

Bridger Basin Oil Company established oil saturation at Parisian 1, NE NW NW 13-1s-15w, Columbia Township, Van Buren County, a semi-wildcat mid-way between the Upper and Lower pools in Columbia, now separated by a two-mile undeveloped area. Lime was

checked at 1239 feet and drilling halted at 1268 feet for acid treatment.

A quarter mile northeast extension of the Bangor field, Van Buren County, was established by Blood & Hendershott's Starz 1, Section 21, which initialed 500 barrels natural from Traverse at 1004 feet, best completion to date in the field opened early this year. However, Jones & Roses' Baird 1, NE SE NE 20-2s-16w, three quarters of a mile northwest of the Starz well, drilled dry in Traverse, as did M. F. Whitehill's Martindale 1, Section 34-2s-16w, a two-mile southeast extension try.

Forty-one permits issued this week brought the total for the month to 111, biggest three-week batch of starts in the state's history. About 90 percent of the total permits are for shallow tests in Southwestern Michigan.

Interest was focused this week on after-acid results on Freeland & Rogers' Whalen 1, Section 14-6s-12w, Kent County, two miles southeast of the proven field in Kent County, which started to pump at 6 barrels per hour following acid. However, around 80 barrels of oil was imported for use in treating the wildcat, so that first pump tests were not too significant.

Michigan Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
Slusser & Kurtzs, Rozema 1, ne sw ne 2-4n-12w	*	1715
C. W. Teater, Martindale 1, sw sw nw 29-1n-12w	*	1515
C. J. Farley, Lampen 1, se nw se 4n-14w	*	1670
Daily Crude Oil Co., Steffes 1, sw sw se 2-4n-13w	400	1599
Socony-Vacuum, Weber 2, nw nw ne 11-4n-13w	590	1591
Bay County—		
W. E. Ross, Dobler 1, c ne nw 15-20n-4e	¶3½	1264
Barry County—		
American Drilling Co., Brown 1, nw nw nw 23-2n-10w	*	2212
Ralph LaBlanch, Nottingham 1, sw sw se 9-1n-10w	*	1906
Clare County—		
C. W. Teater, Van Horn 7, ne sw ne 3-18n-6w	700	3897
Pure, Bicknell B7, c s nw se 28-19n-6w	1250	3899
Kent County—		
Swanson Con. Oil Co., Slykhouse 2, sw sw se 32-7n-12w	180	1823
Wolverine Nat. Gas Co., Johnson 1, nw nw ne 5-6n-12w	551	1786
Montcalm County—		
L. T. Barber, Hansen 1, se nw se 21-12n-6w	¶7	1305
Taggart Bros., Schnick 1, c se 7-12n-9w	¶9	1115
Van Buren County—		
Truss et al, Baird 1, ne se ne 20-2s-16w	*	1037
Blood & Hendershott, Stars 1, ne sw sw 21-2s-16w	500	1004
Grimes & Son, Fox 2, se se sw 7-1s-14w	300	1214
Columbia & Rowmors, Banks 2, sw sw se 11-1s-14w	*	1368
M. L. Jorgensen, Goble 1, sw sw se 13-1s-14w	*	1331
Gem Oil Co., Russell 1, ne sw se 13-1s-14w	90	1308
C. C. Goff, Miller 5, ne sw ne 24-1s-14w	1900	1353
Gordon Oil Co., Petersen 1, ne nw sw 24-1s-14w	*	1335
Mich. Cities, Strong 3, ne ne ne 11-1s-15w	50	1198
Sprenger Bros., Ford 1, nw ne sw 12-1s-15w	22	1187
Lockwood et al, Henry 1, nw sw nw 12-1s-15w	950	1169
J. W. McIntosh, Henry 2, se nw nw 12-1s-15w	980	1180
E. E. McKean, Lake 1, se ne se 12-1s-15w	*	1299
Fisher & McCall, Moorhead 1, sw nw ne 12-1s-15w	30	1200
Daily Crude Oil Co., Teal 1, sw ne nw 12-1s-15w	1050	1187
Clapsaddle & Harris, Locker 3, se se sw 13-1s-15w	470	1201
DeVine et al, Eastman 1, sw sw se 24-1s-15w	*	1195
Coloma Dev. Co., Sanders 1, se sw sw 28-2s-17w	*	1050

* Failures; † Junked; ¶ Million cu. ft. gas.

California Fields

Rio Bravo extended northwest by 960-barrel well.

Performance of Arvin well to speed up drilling.

Los Angeles.—Extending Rio Bravo ¼ mile northwest, Superior Oil Company completed Moodie 1 for 960 barrels per day of 37 gravity oil cutting 20 percent. Production is from 11,529 feet to bottom at 11,550 feet, proving the Rio Bravo producing structure dips downward sharply towards the northwest.

Although no additional drilling is expected in Section 26, considerable activity is anticipated in Section 27, where Superior is laying foundations for Fink 1, about 1/5 mile west of the Moodie completion.

One-eighth of a mile south of the Superior well Union Oil Company's K.C.L. 8-34, NEc Section 34 has encountered the oil zone at 11,270 feet and continues to core in oil sand at 11,290 feet.

Good Arvin Well

In the new Arvin field, discovered in February by Standard Oil Company of California southeast of Mountain View field, Universal Consolidated Oil Company has completed Derby 1, Section 15-31-29, for between 3000 and 4000 barrels per day of 30.0 gravity clean oil and gas production estimated at 2,500,000 cubic feet, a far greater yield than that of Standard's Jewett 1, discovery well. It is expected to liven up the drilling program in that area. According to curtailment regulations the project will be pinched back to 250 barrels per day. Depth is 6173 feet.

Universal Consolidated Oil Company is expected to announce location for another well in this region in the next few days. It is expected that Union Oil Company will start a well on the Berry property to the north, while other wells are anticipated on the Anderson and Greer properties to the south and to the east.

Unusual Pay Level

Arvin field is peculiar inasmuch as large production has been uncovered in an intermediate zone at 6000 feet. In practically all the fields in Kern County production comes from levels either between 1000 to 4000 feet or from 8000 to 13,000 feet.

Besides the new completion there are only two producers in Arvin, but two drilling jobs are active. The Texas Company is preparing to complete

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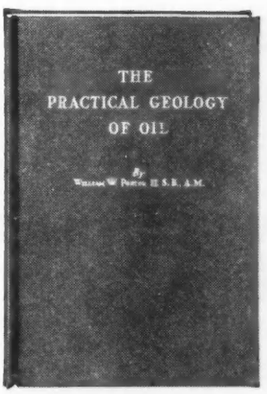

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Jewett 1, about ½ mile northeast of Standard's discovery, and Standard is drilling Jewett 2, offsetting the discovery well.

In the much explored Casmalia region, Hogan Petroleum has staked location for a deep test, No. 1 SE Section 33-9n-34w. This location falls near the company's recently abandoned Zabala 1. Two other core hole wells were also drilled by the company in this region. The new project lies four miles southeast of Casmalia and 8 miles south of Santa Maria.

In the north portion of Cantua Creek area and embracing most of Sections 19, 20, 21, 30, 32 and 34, a heavy leasing campaign has been in progress for several months, with over 5000 acres leased by Superior Oil Company, O'Kane, and Brain, Jergins Trust, and other firms.

To Test Deep Ones

California Exploration Company has plugged back Salisbury 1, a wildcat, to 12,809 feet and plans to test the Stevens zone by stages. The project, located in Section 7-29-24, or about 10 miles east of Buttonwillow gas field, has encountered over 400 feet of Stevens formation intermingled with shale. Previous attempts to develop commercial production have not been successful.

About 10 miles east of Buttonwillow Union and Associated Oil companies are preparing to make a water shut-off test on K.C.L. 1-36 to test a zone from 12,787 feet to 12,985 feet. A successful completion in this spot will open up a new field similar to the Wasco deep field.

Five miles north of Lompoc field and in Section 28-8n-34w, Sun Bell Oil has staked location for No. 1, a shallow project. Several wells in the region surrounding this location are pumping small quantities of low gravity crude.

Southeast of Wheeler Ridge and about six miles southeast of Standard Oil Company of California's group of producers, the Petrol Corporation has resumed operations on Reserve-Petrol 33-5, a wildcat. The project is bottomed in hard gray sand at 8946 feet. Plans call for the well to be drilled to 10,000 feet in search of the Eocene.

Attempts to complete Tide Water Associated and Continental Oil's outpost test K.C.L. E-35, 1 mile northeast of Canal field, have not met with success. On a test of the zone from 8300 to 8364 feet the well failed to flow and fluid recovery consisted of a considerable amount of salt water. Attempts are now being made to locate the source of water.

JACK THOMAS BURNES, employed by Mountain Fuel Supply Company, was killed May 15 when crushed beneath a pulling mast at the company's Union Pacific 2, in the North Baxter field, 11 miles northeast of Rock Springs, Wyoming.

California Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Los Angeles County (Athens-Rosecrans)—		
Universal Consolidated Trust	281	7817
Los Angeles County (Dominguez)—		
Union, Callender 67	430	7799
Carson 11	125	8608
Los Angeles County (Montebello-West)—		
Kern-St. Helens Properties, Monterey 30	761	7275
Standard, Whitehead 5	290	7185
Los Angeles County (Potrero)—		
Basin Oil, Potrero 2	225	6176
Los Angeles County (Torrance)—		
Pacific Western, Marble Fee 22..no est.		4965
Packard Operating Co., Louden 1..	75	5085
Los Angeles County (Wilmington)—		
Richfield, Pacific Dock (LB) 30....	306	3210
Russel B. Seymore, Black Gold 1..	50	3669
Signal O&G Co., Signal-L. B.-Newport CD-1	500	4300
Los Angeles County (Hawthorne Area)—		
Rio Hondo Oil Co., No. 1, 22-3-14..	*	2100
Los Angeles County (La Mirada Area)—		
John McKeon & Assoc., Carmenita 1, 21-3-11	*	8990
Orange County (Huntington Beach)—		
Southwest Exploration, State 18....	120	4900
Kern County (Belridge)—		
Belridge Oil Co., No. 16, sw ne 28-27-20	425	8585
Kern County (Kern River)—		
D. B. K. Co., No. 4, swc n½ nw nw 34-28-28	5	405
Kern County (Delano Area)—		
Atlas Pet. Co., Moore 1, s e nwc 7-25-25	*	3826
Fresno County (East Coalinga Eocene Pool)—		
R. S. Lytle, No. 62-7F, 7-20-16....3241		8020
Standard, No. 73-13C, 13-20-15....3110		7070
Kings County (Kettleman North Dome)—		
Standard, No. 81-19Q, 19-22-18....1550		7540
K. N. D. A., No. 6-22Q, 22-22-18..5092		7925

* Failures; † Junked; ¶ Million cu. ft. gas.

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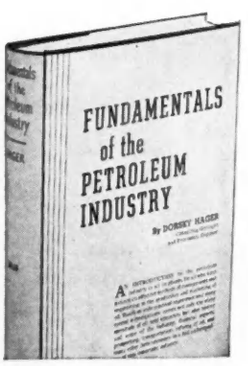

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Rocky Mountain Fields

Carbonated mud useful in Lance Creek drilling-in. Outside location flows 845 barrels from Leo sand.

Casper, Wyo.—A recent innovation in Rocky Mountain drilling practices, the use of carbonated mud for drilling-in in sand formations generally productive in this area, is credited with a number of recent successes at Lance Creek, the most active field in Wyoming.

In use operators add approximately 10 percent of 100-mesh lime to the weighted drilling fluid used in drilling-in to the productive formations. After drilling to the final depth, the formation is washed over with inhibited acid, which reacts with the lime in the drilling mud and aids in cleaning the formation and completing the well faster than formerly.

Further substantiation of the productivity of Leo sand on the western slope of Lance Creek was given this week by Minnelusa Oil Corporation's Joss 2, SEc NE SW 6-35n-65w, an outside location for the field, which flowed 845 barrels initial from the second Minnelusa formation after completion at 5348 feet by the carbonated mud method.

40-Well Program

Reliable but unconfirmed reports indicate drilling of some 40 wells in Lance Creek during the current drilling season by Continental Oil Company in fulfilling offset requirements. This activity in the Niobrara County field will be the heaviest in the Rocky Mountain district since the hey-day of Salt Creek activities. At present 9 wells are drilling within the proved limits of the field and 1 location is active on the eastern limits of production.

Disappointing results were obtained in the lower lime formations drilled in the Continental Oil Company's Delahoyde 1, CNL NE NE 25-37n-63w, discovery well in the Ant Hills field, 14 miles east of Lance Creek. The well, originally completed in Dakota sands in 1928 for 250 barrels initial, deepened to 6925 feet in a pink lime horizon to test possible production in lower sands. It failed, however, to encounter any oil or gas shows in commercial quantities below the original producing formation.

Necessity for increasing the gas supply under the franchise serving Salt Lake City and other Utah communities having arisen, Mountain Fuel Supply Company is resuming operations in North Baxter Basin field, Sweetwater County, southwestern Wyoming, principal gas field supplying this area. The company will deepen Clark 1, SEc NW NW Section 12-19n-104w, from 264 feet, where well was suspended in December, 1937, to the Dakota gas horizon of the field for completion. Cable tools are being rigged for the deepening job. A previously completed water well in the field, Mountain Fuel's Charles Stone 1, CSW SW SW 18-19n-103w, is being plugged back to shut off the water horizon at 4546 feet and will gun perforate opposite the Dakota gas sands for recompletion as a gas well.

Deep Test Resumes

First of the deeper Colorado wildcats in the high mountain area of the western slope to get underway following winter shutdowns is Continental Oil Company, California Company and Amerada Petroleum Corporation's David Miller 1, SW SW NW 36-8s-91w, which is cleaning out to drill ahead from 9410 feet. The well established a new deep hole record for Colorado shortly before closing down for the winter late in December, 1938. Test may be carried below 10,000 feet.

In the Wyoming sector of the Tri-State basin the deep wildcatting play is being pushed by the several companies. The Texas Company's Unit 1, SE SW 1-28n-114w, on Dry Piney structure, Sublette County, drilling below 7800 feet, is projected to below 8000 feet for a test of Dakota formations. Some oil and gas shows of a commercial nature reported in lower Frontier sands may be tested later by upstage perforation. To the north and east of the Dry Piney test The California Company's Government 1, CSW NE 14-31n-109w, Pinedale structure, Sublette County, drilling below 4000 feet, is scheduled for completion below 8000 feet.

Additional shallow exploration in the Sublette County area will be done by Anderson Drilling Company, which has moved in two standard rigs and plans to drill several wells on a 1500-acre block assembled near Big Piney.

Deeper developments in several of the northern Wyoming fields are receiving renewed attention this spring. Continental Oil Company recently deepened 2 wells on Northern Pacific leases in Frannie field, Park County, about 100 feet further into the producing sands, obtaining an average of 100 barrels per day greater production in the wells. Preparations are being made to deepen a third.

Resolute Oil Company inaugurated the deepening program in Badger Basin, Park County, and has deepened State 1, CNW SW 16-57n-101w, to 8595 feet, where it recompleted for 85 barrels daily, approximately twice the original production of the well. The company's Government 3, CNE NE 20-57n-101w, was also deepened to 8709 feet, where it made 180 barrels in 18 hours. It was originally completed for 70 barrels at 8679 feet.

Mountain States Completions

COLORADO

Company, Well and Location	Init. Prod. Bbls.	Depth
Fremont County (Florence)—		
Isadore Spangler, St. Marys 1, se se se 2-19s-70w	30	2315
Watersville Oil Co., Persons 1, cwl ne ne 17-18s-69w	*	90
MONTANA		
Glacier County (Cut Bank)—		
R. C. Tarrant, McClellan 2, csw se 12-34n-6w	250	2761
Toole County (Kevin Sunburst)—		
Big West Oil Co., Dahlquist 9, cnw ne 28-35n-3w	275	1721
WYOMING		
Niobrara County (Lance Creek)—		
Mackinnie Oil & Dr. Co., Thompson 5, se se nw 7-35n-65w	2160	5450
Park County (Badger Basin)—		
Resolute Oil Co.'s State 1, cnw sw 16-57n-101w	85	8595
Frannie—		
Continental, Northern Pacific 1, se sw ne 23-58n-98w	500	3383
Northern Pacific 1, se sw se 23-58n-98w	259	3317
Weston County (Osage)—		
Dilger et al, Ost 1, cwl sw se 25-46n-64w	*	1549

* Failures; † Junked; ¶ Million cu. ft. gas.

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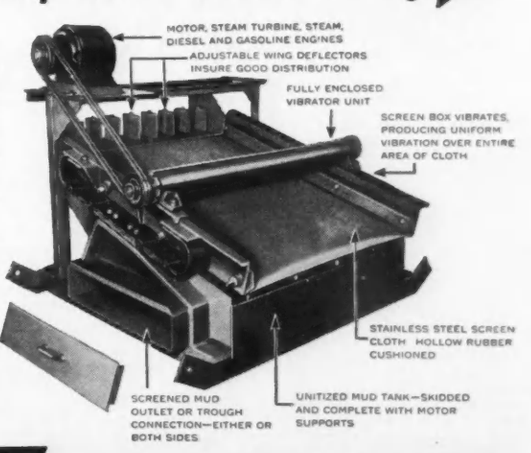
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WILDCAT REPORT
New Starts and Completions

STATE	WILDCATS STARTED		WILDCAT TESTS COMPLETED							
			Total		Oil		Gas		Dry	
	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year
Alabama	...	3	...	1	...	...	...	...	...	1
Arkansas	2	14	...	7	...	...	...	...	...	7
California	6	109	3	56	...	16	...	1	3	39
Colorado	...	...	...	3	...	...	...	...	...	3
Georgia	1	3	...	1	...	...	...	...	...	1
Illinois	18	215	13	150	...	13	...	...	13	137
Indiana	1	11	2	12	1	4	...	1	1	7
Kansas	7	87	3	78	1	28	...	1	2	49
Kentucky	1	6	1	11	1	6	...	...	...	5
Louisiana	1	56	4	38	...	7	...	...	4	31
North Louisiana	1	20	...	11	...	3	...	...	...	8
South Louisiana	...	36	4	27	...	4	...	...	4	23
Michigan	4	82	6	119	...	7	...	...	6	112
Mississippi	2	5	...	1	...	...	...	...	...	1
Missouri	...	1	...	...	...	...	...	...	...	...
Montana	...	1	...	...	...	...	...	...	...	1
New Mexico	...	18	...	5	...	...	...	1	...	...
New York	...	...	...	2	...	...	...	1	...	1
Oklahoma	3	78	6	74	1	9	...	4	5	61
Ohio	...	2	...	7	...	1	...	...	...	6
Pennsylvania	...	1	...	2	...	...	...	...	...	2
South Dakota	1	...	...	...	...	...	...	...	...	...
Texas	32	428	22	436	3	43	...	5	19	388
East Texas	2	50	...	37	...	2	...	...	...	35
North Texas	7	64	3	96	...	18	...	1	3	77
Gulf Coast	4	52	3	35	...	3	...	...	3	32
Panhandle	2	5	...	4	...	...	...	...	...	4
South Texas	11	167	10	189	2	13	...	3	8	173
West Texas	6	90	6	76	1	7	...	1	5	67
West Virginia	...	1	...	...	...	...	...	...	...	...
Wyoming	...	1	...	1	...	...	...	...	...	1
Total U. S.	78	1123	60	1005	7	134	...	14	53	857

ARKANSAS

FIRST REPORTS

Bradley County — Amerada Pet. Corp.'s Bradley Lbr. Co. 1, c se ne 14-17-10, lcn.

Sevier County—McArthur et al's Bell 1, c se sw 29-9-32, spudded and shut down.

CALIFORNIA

FIRST REPORTS

Los Angeles County—Stabeck & Assoc.'s No. 1, 600 ft s 1500 ft e nwc 14-2-10, Puente area, rig. Vulcan Oil's Drake 1, 72 ft sw 75 ft nw swc Lemon and Workman-Mill rd in 17-2-11, Whittier area, lcn.

Kern County—Louis E. Banow's Irwin 1, 170 ft n 2056 ft w sec 15-10-23, San Emigdio area, elev 2655 ft, ru light rotary.

Tulare County — Standard's Tulare Farms 2-1, 660 ft n 660 ft e swc 35-24-23, lcn.

Santa Barbara County—Hogan Pet.'s No. 1, surveying lcn for deep test in sec 33-9-34, Bicknell area. Sun-Bell Oil's No. 1, lot 5 in 28-8-34, rig.

COMPLETIONS

Los Angeles County—Rio Hondo Oil Co.'s No. 1, 750 ft s 400 ft w c/ls Cerise and Rosecrans Ave. in 22-3-14, Hawthorne area, abnd 2100 ft. John McKeon & Assoc.'s Carmenita 1, 233 ft s 433 ft e c/ls Firestone Blvd. and Carmenita in 21-3-11, La Mirada area, abnd 8990 ft.

Kern County—Atlas Pet. Co.'s Moore 1, 1000 ft s 150 ft e nwc 7-25-25, Delano area, abnd 3826 ft.

GEORGIA

FIRST REPORTS

Montgomery County — George E. Failing Co.'s Meadows 1, near Uvalda, elev 199 ft, dr 1548 ft.

ILLINOIS

FIRST REPORTS

Christian County—Heldt's Smith 1, sw sw se 10-3n-1w, dr.

Clark County—W. R. Miller's Booth 1, se ne ne 17-11n-14w, rig for deep test.

Coles County—W. R. Miller's Stull 1, se sw ne 21-11n-10e, dr. Dee Bros.' James 1, nw nw ne 12-12n-8e, dr.

Edwards County—McFadden et al's Charles Bump 1, se sw 34-2s-14w, 2 mi northeast of Grayville, rig. N. M. Massid's A. S. Toops 1, se 13-3s-10e, 3 mi west of Grayville, moving in materials.

Gallatin County—F. R. Jackson's Turner 1, c nw 27-9s-9e, Gold Hill tnp, dr. Byron Glascoe's Williams 1, nw ne se 20-9s-9e, Gold Hill tnp, dr.

Jefferson County—Armstrong et al's Scott 1B, se ne nw 23-3s-2e, McClellan tnp, dr. M. B. Armer et al's Gilbert 1, nw ne sw 25-2s-2e, rig. Papoose Oil Co.'s Wchweinfurth 1, nw sw se 11-2s-2e, dr.

Lawrence County—Jordan's Dallham 1, c se sw 32-5n-11w, rig.

Moultrie County—Seaboard Oil Co.'s Horn 1, sw se ne 29-13n-5e, dr.

St. Clair County — Pennington & Dunn's Schoene 1, se ne 2-1n-6w, dr.

Saline County — Coast Production Co.'s Choisser 1, ne nw nw 5-8s-7e, re-entering old hole to deepen.

Wabash County—Mammoth Oil Co.'s Wm. Dunn 1, sw sw 25-2s-4w, 4 mi northeast of Grayville, loc.

Washington County—Harry Horter's Flanans 1, se sw nw 10-2s-4w, dr. Pat Hardman's Rosanski 1, nw sw sw 19-3s-1w, rig.

Wayne County—Carl Robinson's Carter 1, c se ne nw 15-2s-8e, Grover tnp, dr. Earl Corley's W. B. Draper 1, c se nw ne 15-3s-6e, Orel tnp, dr.

COMPLETIONS

Adams County—W. R. Wilson et al's Adams 1, nw sw nw 28-2n-7w, Keene tnp, top St. Peter 830 ft, abnd 850 ft.

Bond County—Eason Oil Co.'s St. Louis Joint Land Bank 1, ne ne nw 24-4n-3w, Mills tnp, top Fredonia 1317 ft, hole lost 1340 ft.

Clinton County — Petroleum Service Ltd.'s V. Bott 1, nw sw sw 17-2n-2w, Carlyle tnp, top Benoist 1241 ft, salt water, abnd 1245 ft.

Crawford County—H. P. Snavely's Lloyd Man 1, nw nw se 18-6n-12w, Robinson tnp, top Mississippian 1472 ft, pumped 6 bbls oil and large amount of water after 60 qt shot, td 1600 ft.

Franklin County—Adams Oil & Gas Co.'s Old Ben Coal Co. 1, sw sw ne 19-5s-2e, Barren tnp, old test deepened, abnd 4688 ft.

Fulton County—K. & F. Development Co.'s K. Frederick 1, ne ne ne 10-7n-1e, Lee tnp, abnd 590 ft.

Hancock County—Groves & Cooke's S. M. Talbott 1, nw nw sw 15-4n-5w, St. Mary's tnp, top Niagara 480 ft, abnd 530 ft.

Jasper County—Small Wood tnp, top Fredonia 3115 ft, top oolitic lime 3118 ft, abnd 3250 ft.

Montgomery County—Swords and McDougal's Brewmer 1, c ne ne sw 16-10n-1w, Audubon tnp, abnd 1050 ft.

Richland County—A. C. Leathers et al's A. Yonaka 1, nw se sw 22-2n-14w, Bonpas tnp, bailed to shut off salt water after coring 4 ft of McClosky, topped at 3040 ft, abnd 3062 ft.

Saline County—Kingwood Oil Co.'s McIntyre 1, nw nw nw 25-9s-7e, Cottage tnp, abnd 2712 ft.

Shelby County—Independent Producers & Refiners' Hackenburg 1, se sw sw 20-12n-2e, Rural tnp, top St. Louis 1705, abnd 1715 ft.

White County—Arab Petroleum Corp.'s R. E. Pearce 1, ne nw nw 35-6s-10e, Emma tnp, top St. Louis 3047 ft, abnd 3053 ft.

INDIANA

FIRST REPORTS

Spencer County—L. L. LeMoine and J. Ervin Taylor's Delbert Haynes 1, se se ne 11-6s-7w, 1 mi northwest of Midway, rigging up cable tools.

COMPLETIONS

Gibson County — W. F. Lacy's Cooper-Thomas 1, nw sw sw 18-3s-13w, Wabash tnp, top Cypress 2501 ft, started pumping 25 bbls hr after plugging back from dry McClosky to open new producing horizon in Gibson pool, drilled to 2917 ft. W. R. Nicholson's Perry Fleener 1, se nw nw 25-3s-13w, Wabash tnp, top McClosky 2762 ft, sulphur water, abnd 2808 ft.

KANSAS

FIRST REPORTS

Harvey County—W. Kansas O. & Refg. Co.'s Mooreshead 1, swc 24-23s-1w, lcn. Garden et al's Lagree 1, sec 4-23s-3w, otd 280 ft, dr 2600 ft.

Haskell County—United Production Co.'s Illinois Life 1, nwc se 31-29s-34w, rur.

Johnson County—Judd's Waite 1, cnl sw se 4-15s-25e, dr.

Rice County—Carey Oil Co. et al's Link 1, sw nw se 19-19s-9w, lcn. Nelson Drilling Co.'s Hodge 1, nwc ne 25-20s-6w, rur.

Woodson County—Sheedy et al's Long 1, sec sw 28-26s-14e, dr.

COMPLETIONS

Ellsworth County—Gulf Oil Corp.'s Janssen 1, swc 29-17s-10w, ¾ mi n Habiger and ½ mi e Bloomer pool, top Topeka 2575 ft, top Lansing 2960 ft, top Arbuckle lime 3254 ft, acidized 2000 gals, td 3272 ft, pumped 716 bbls, gr 42.3.

Russell County—Phil-Han Oil Co.'s Hill 1, se sw sw 16-14s-14w, west of Fink pool, top anhydrite 858 ft, top Ft. Riley 1770 ft, top Topeka 2735 ft, top Lansing 3023 ft, top Granite wash 3280 ft, abnd 3350 ft.

Sedgwick County—Century Petroleum Co.'s Wilke 1, sw se sw 1-29s-2e, 4 mi e Derby gas pool, top Ft. Riley 278 ft, base Florence 412 ft, abnd 870 ft.

KENTUCKY

FIRST REPORTS

Todd County—C. C. Massey, Dan E. Watley and Harry C. Appell's Seldon Slaughters 1, 2 mi east of Clifty, loc for Coniferous test.

COMPLETIONS

Hopkins County—Central States Oil Co.'s (Hobbs, Hunsaker & Campbell's) W. J. Cox 1, 5 mi southeast of Madisonville, top Cunningham sand 2061 ft, pumped 480 bbls oil in 48 hrs, td 2092 ft.

NORTH LOUISIANA

FIRST REPORTS

DeSoto Parish—Ryan & Andrews' Mrs. W. M. Anders 1, c nw se 5-11n-14w, lcn.

SOUTH LOUISIANA

COMPLETIONS

Acadia Parish—T. G. Markley's Vincent 1, Trilby area, Section 19-7s-1w, abnd 9040 ft.

East Baton Rouge Parish — Gulf States' Greater University Land 1, e of Baton Rouge, 4339 ft ne along se line of sec 48 from most easterly sec of same, thence nw at right angles in sec 48-7s-1e, abnd 7678 ft.

Iberville Parish—Humble's Iberville Mortgage Loan Co. 1, Bayou Des Glaise area, 2911 ft s and 567 ft w of nec sec 38-12s-33e, abnd 10,025 ft.

Iberia Parish—Texas Co.'s State 5, Fausse Point, 4350 ft s and 3550 ft e from nwc of sec 35-11s-8e, abnd 12,125 ft.

MICHIGAN

FIRST REPORTS

Allegan County—Vanco Oil Co.'s Richardson 1, ne ne sw 27-1n-14w, rig.

Barry County—Bell-Marks, Inc.'s Morgan 1, nw nw nw 10-4n-10w, rig.

Kent County—C. W. Teater's Hendershott 1, nw sw ne 29-8n-12w, rig.

Van Buren County—T. C. Hudson's Scott 1, ne sw ne 19-2s-16w, lcn.

COMPLETIONS

Allegan County—Slusser & Kurtzs' Rozema 1, ne sw ne 2-4n-12w, abnd 1715 ft. C. W. Teater's Martindale 1, sw sw nw 29-1n-12w, abnd 1515 ft.

Barry County — American Drilling Co.'s Brown 1, nw nw nw 23-2n-10w, abnd 2212 ft. Ralph LaBlanc's Nottingham 1, sw sw se 9-1n-10w, abnd 1906 ft.

Van Buren County—Devine et al's Eastman 1, sw sw se 24-1s-15w, abnd 1195 ft. Coloma Dev.'s Sanders 1, se sw sw 28-2s-17w, abnd 1050 ft.

MISSISSIPPI

FIRST REPORTS

Humphreys County—Union Producing Co.'s Box 1, c sw 15-14n-4w, moving in materials.

La Fayette County — Adams O&G Co.'s Llewellyn 1, ne nw nw 9-10s-1w, moving in materials (4000-ft test).

OKLAHOMA

FIRST REPORTS

Caddo County—Sinclair Prairie Oil Co.'s Yoeman 1, se nw nw 1-6n-13w, lcn.

Kiowa County—Heggerling et al's Bozman 1, sec ne 14-5n-17w, pits.

Lincoln County—Mason et al's Lindsay 1, sw se se 26-12n-3e, dr.

COMPLETIONS

Cotton County—Costley's Garrison 1, ne sw nw 18-4s-10w, 6 mi sw Temple, abnd 1234 ft.

Kiowa County—Pure Oil Co.'s Fuqua 1, swc ne 18-6n-16w, 6 mi se Gotebo pool, top lime 380 ft, top Sylvan 1689 ft, top Viola 1990 ft, abnd 2019 ft.

Oklahoma County—Walters et al's Olmstead 1, c e½ se nw 12-14n-3w, 5 mi ne Edmond pool, top Oswego 2760 ft, top Woodford 6050 ft, top Hunton 6055 ft, top Sylvan 6194 ft, top Viola 6290 ft, top Dolomite 6390 ft, top Wilcox 6420 ft, top second Wilcox 6492 ft, abnd.

Seminole County—Buell's Madgett 1, se sw se 15-10n-5e, between Earlsboro and N. Earlsboro pools, top Misener 4574 ft, top Hunton 4575 ft, top Sylvan 4618 ft, top Vida 4710 ft, top Dense 4755 ft, top Dolomite 4765 ft, top Wilcox 4802 ft, abnd 4810 ft.

Stephens County—Phillips Petroleum Co.'s Culbertson 1, nwc se 4-1n-5w, td 5620 ft, top Deese sand 5616 ft, shot 90 qts 5592-5616 ft, 1071 bbls, gr 42, completed.

Tillman County—Helf et al's Brisley 1, nec 22-1s-19w, 4 mi se Tipton pool, top Pontotoc 1100 ft, top Canyon lime 2640 ft, abnd 3515 ft.

EAST TEXAS

FIRST REPORTS

Camp County—Harry S. Moss et al's W. D. Keeling 1, 330 ft south of center of n line of Vincent Hamilton sur, and on 250-acre tract, 3 mi s by e of Pittsburg, mim.

Kaufman County—A. J. Tyler & C. C. Smith's Trinity Farms 1, 1500 ft fr n and 300 ft fr e lines of G. Crocker sur, 3½ mi sw

TEXAS PANHANDLE

FIRST REPORTS

Armstrong County — Holmes, Newblock & Haley's E. J. Moore 1, 1954 ft fr n and 1000 ft fr w lines H&GN sec 319, blk B-4, lcn for 4500-ft test.

Castro County—English Drl. Co. et al's J. Gundlach 1, c nw¼ sec 145, blk M-6, Stone-Kuyle & Kyle sur, lcn.

NORTH TEXAS

FIRST REPORTS

Archer County—C. A. Johnston et al's C. L. Abercrombie 1, 1360 ft fr s and 1050 ft fr w lines of S. Abercrombie sur, A-752, 3 mi w and 2 mi s of Archer City, dr 815 ft. H. H. Fraser et al's W. M. Coleman 1, 330 ft out of nec lot 56, Lulu P. Hunt subdiv, lcn for 2300 ft Canyon test.

Clay County—L. T. Burns et al's C. L. Wynn 1, 330 ft fr e and 990 ft fr s lines of lot 34, H. Williams sur A-704, 7 mi s Blue Grove, rur for 5100-ft test. John E. Farrell, Crouch et al's C. P. Malone 1, 330 ft fr nec T&NO sec 12, A-828, se of Henrietta, lcn. Sussex Oil Corp.'s Mrs. E. A. Glasgow 1, 150 ft fr ne and 1500 ft fr se lines of blk 35, Bacon subdiv, 4 mi w Petrolia, sp for shallow test.

Cooke County—Cree and Hoover's J. A. Becker 1, 1459 ft fr n and 1320 ft fr e lines lot 10, Geo. Ivy sur A-516, 2 mi n Muenster, mim for 1400-ft test.

Montague County—T. C. Hadley et al's R. V. Braswell 1, 330 ft fr e and 330 ft fr s lines of m/s/se corner of 242-ac tract, H. N. Baker sur A-49, 2 mi ne Bonita, mim for 4500-ft test.

COMPLETIONS

Clay County—Harry S. Moss et al's T. J. Permley 1, 1930 ft fr n and 330 ft fr e lines of blk 65, Marion C. S. L. sur, A-308, abnd 4055 ft.

Cooke County—Geo. Ross & Co.'s Bailey Inglish 1, 330 ft fr n and 990 ft fr e lines of G. W. McGowan sur, A-695 ft, tested little oil after 25-qt nitro shot 1624-34 ft, abnd in schist 1920-24 ft.

Jack County—Welch-Hill et al's G. T. Griffith 1, 2200 ft fr s and 750 ft fr w lines of D. D. Brown sur, A-1778, abnd 487 ft.

WEST CENTRAL TEXAS

FIRST REPORTS

Lampasas County—J. R. Sterrett et al's A. M. Smith 1, 1200 ft fr s and 6550 ft fr e lines of D. W. Biggs sur No. 48, Abst 37, lcn.

WEST TEXAS

FIRST REPORTS

Crane County—Gulf Oil Corp.'s W. N. Waddell et al 11, 440 ft out of sec PSL sec 20, blk B-21, rur.

Dawson County—Magnolia Pet. Co.'s J. B. Fry 1, 330 ft fr w and 2310 ft fr s lines of e½ T&P sec 8, blk 35, T-4-N (490-acres), mim.

Jones County—Fain-McGaha Oil Corp.'s J. H. Harris 1, 330 ft out of sec blk 79, league 125, DeWitt County School lands, lcn. E. C. Lawson et al's A. M. McNair 1, 330 ft out of nwc of 50-acre tract, lot 3, blk 5, Mary Lawson sur, lcn.

Pecos County—R. G. Patillo et al's W. T. Gilworth-Gulf 1, 330 ft fr nw and sw lines of H&GN sec 90, blk 10, mim for shallow test.

COMPLETIONS

Ector County—Sid W. Richardson et al's T. P. Land Trust 1, 440 ft out of nec T&P sec 13, blk 45, T-1-S, elev 3201 ft, top anhydrite 1518 ft, abnd 1643 ft.

Gaines County—Osage Drl. Co.-A. S. Everts' Dr. E. H. Jones 1, c se nw PSL sec 20, blk A-7, elev 3625 ft, top anhydrite 2065 ft, top Yates 3032 ft, or between 3030-40 ft, top brown lime 4020 ft, top solid lime 4580 ft, sul water and abnd 5144-46 ft.

Stonewall County — Forest Development Corp.-Helmerich & Payne, Inc.'s Boyd 1, 530 ft fr n and 1930 ft fr e lines H&TC sec 45, blk D, elev 1670 ft, top Noodle Creek lime 2730 ft, top Palo Pinto lime 4687 ft, top pay 4708 ft, pb fr water 4760 ft to 4732 ft, used 7000 gals acid, pumped 187 barrels oil and 33 barrels water initial after standing for period.

TEXAS GULF COAST

FIRST REPORTS

Chambers County—Plymouth Oil Co.'s Wilborn 1, Robertson Lake area, 1172 ft s and 1165 ft e of nwc of 1168-ac tract in W. Moore sur, lcn.

Galveston County—Sun's State 1-175 East Bay area, 2400 ft nw of se line and 4600 ft ne of nw line of tract 179 in tract 175, lcn.

Matagorda County—Pierce Estate's Fee P-2, Podo area, 3000 ft fr ne and 2700 ft fr se line of 32,000-acre tr, B. Rawls and O. H. Stout sur, lcn.

Wharton County—Moore & Ahern-Cron & Gracey's Mauritz Bros. 1, Danevang area, 466 ft fr s and w line of 160-ac tract, Beaty, Seale and Forwood sur, lcn.

COMPLETIONS

Ft. Bend County—Royal Oil Co. and Pat Rutherford's Bertrand 1, e of Richmond, 1100 ft n and 2800 ft w of sec of J. Wilkens sur, abnd 6504 ft.

Montgomery County—O. C. Garvey's Foster Estate 1, Willis area, 534 ft fr n and 407 ft fr w line of block 5, N. Martin sur, abnd 7401 ft.

Wharton County—Magnolia's Borden Estate 1, begin at extreme wc of E. M. Cox sur and go 990 ft sw along extended nw line of E. M. Cox sur, to lcn in H. Griffith sur, abnd 6477 ft.

SOUTH TEXAS

FIRST REPORTS

Brooks County—Magnolia Petroleum Co.'s Leroy Denman 2, 330 ft n line, 330 ft w line of lot 3, blk 77, copita farm and Garden subd, preparing move in.

Duval County—Dan Auld's Denman 1, 467 ft s line, 467 ft w line ne¼ sec 14, Jose Marcello Hinojosa gr, lcn.

Hays County — Antibus and Lehmann's Howe 1, 370 ft s line, 1763 ft e line of Louis Wortel sur 31, drilling 585 ft.

Hidalgo County—E. L. Smith and Wheelock & Collins et al's Yturria Land and Improvement Co. 1, 466 ft s line, 466 ft w line of 1000-ac lse in por 42, rigging up (deal taken from Homer P. Lee).

Jackson County—Lonnie Glasscock's Drummond 1, 466 ft s line, 466 ft e line of 200-ac lse out of Raymond Musquez gr, spudded.

Jim Wells County—Vernon G. Schimmel et al's Embleton 1, 466 ft s line, 467 ft e line of w/80-ac of blk 13, A. L. Smith's Farms, resubd of Sholar's Land Co. subd of Robert Adams ranch, set sur csg, waiting on cement. Texas Gulf Producing Co.'s Miller 1, from s cor of 376.4-ac tr, go n along w line 467 ft, thence e 150 ft at rt/ang, San Antonio de Agua Dulce gr, Ab-249, moving in machinery.

McMullen County—Reynolds & Richardson's Shiner 4, 1754 ft w line, 1759 ft s line of sec 80, Schumway subd, S. N. Steinhardt sur 62, lcn.

Starr County—Banks Miller Oil Co.'s Clopton, McLean and Reed, 150 ft n line, 330 ft e line of blk 79, unit 3, Valle Rico del Rio Grande subd, por. 75, J. of Carmargo, spudded. Stevens & Verne Clopton's Green and Manning 1, 150 ft s line, 150 ft w line of lot 3, share 85, porcion 81, standing 40 ft.

Webb County — Magnolia Petroleum Co.'s Benavides 2 (5-B) 990 ft ne line and 990 ft se line, BS&F sur 695, lcn.

COMPLETIONS

Duval County—J. B. Blanchard's Parr 1, 2632 ft e line, 466 ft s line of T. C. Rogers sur 298, 490 ft derrick floor, top Pettus 4712 ft, soft sand with oil show 4712-15 ft, 22 bbls 42.6 grav oil 23 hrs.

Guadalupe County—H. H. Coffield's Wells 1, 150 ft n line, 150 ft e line of 50-ac lse, C. C. Currier sur, abnd 3080 ft. Trio Oil Co.'s Jahns 1, 600 ft s line, 150 ft e line of 100-ac lse, J. K. Davis sur, Ab-15, abnd 3060 ft, apparently in Edwards.

Hidalgo County—Rowan and Hope's Bazan 1, 330 ft n line, 330 ft e line of subd 6-A, Share 9-A, San Ramon gr, abnd 7508 ft.

Jim Wells County—Parr Drilling Co.'s Hoffman 1, 330 ft s line, 330 ft e line of 160-ac tr, comprising reserve townsite of Springfield, sec 8, reported sand 5627-37 ft, flow about 38 to 40 bpd 46.4 gr, 5826 ft. Texas Gulf Producing Co.'s Perez 1, 676 ft n line, 274 ft e line, 200-ac lse, Manuel Barrera sur Ab-36, abnd 6862 ft.

Live Oak County—Harry Hotchkin's Hamilton 1, 330 ft s line and 330 ft e line of blk 11, H&GN sur No. 3, abnd 2230 ft. Fred W. Shield's Adams 1, 330 ft w line, 330 ft n line of blk 2997, sec 28, Dr. C. F. Simmons Farm Lots subd, abnd 2343 ft.

Starr County—A. E. Henninger's Guerra 2, 353 ft ne line, 217 ft se line, por 56, Jurisdiction of Mier, abnd 950 ft.

Webb County—Superior Oil Co.'s Frost and Wilson 2, 330 ft s line, 330 ft e line of sw¼ sec 35, CCSD and RGNG rr sur blk 2, abnd 1950 ft.

Texas operators start 172 new tests

The Texas Railroad Commission last week approved permits for drilling 172 new wells in Texas, 49 less than were allowed the week before.

Operators in the East Texas field reported three locations from Gregg County, while eight permits were allowed in the remainder of the East Central Texas territory.

The Commission approved 22 locations in West Texas and 13 in West Central Texas. There were 36 permits granted in the Gulf Coast area and 38 in Southwest Texas, including 16 in Duval County.

North Texas operators were permitted to drill 38 new wells, including 14 in Wichita County. Panhandle producers reported 14 locations.

Mykawa hearing

Operating conditions in the New Mykawa field, Harris County, will be considered at a hearing scheduled by the Texas Railroad Commission for June 2, in Austin. Special attention will be given to wells operated by the West Production Company.

NOTES FOR THE Equipment Buyer and User

Shallow Well Helical Pumping Reducers

FOOTE BROS. GEAR & MACHINE CORPORATION

Foote Bros. Gear & Machine Corporation, Chicago, has recently added to its line of IXL oil well pumping reducers a series of double reduction helical units for pumping individual shallow wells.

These units are offered in the following sizes:

9 DLO—3.5 horsepower capacity. Peak torque at 20 strokes per minute 17,000 inch-pounds.

10 DLO—5 horsepower capacity. Peak torque at 20 strokes per minute 20,000 inch-pounds.

11 DLO—7.5 horsepower capacity. Peak torque at 20 strokes per minute 34,000 inch-pounds.

Cases are constructed of semi-steel, treated to prevent flaking. Gears are low helix angle helicals of alloy cast iron. The helix is opposed on high and intermediate sets to absorb the reduced thrust loads. Pinions are heat treated alloy steel; with Timken roller bearings used on both shafts.

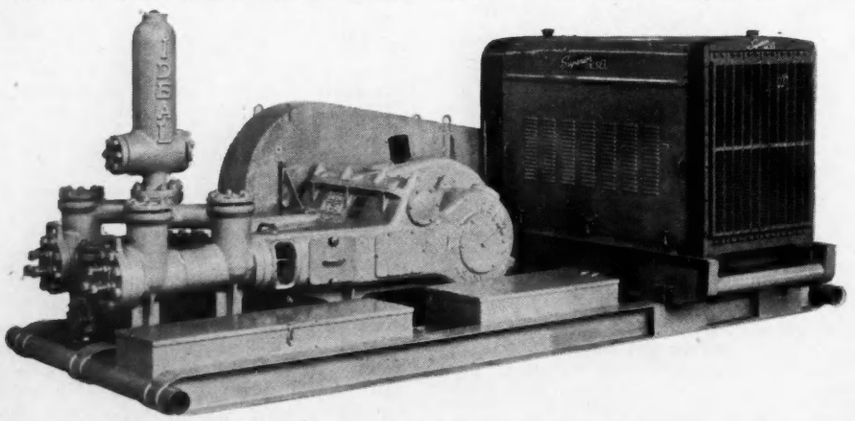
These units are very compact in construction, have been carefully designed, and present a pleasing appearance.

Power-Driven Slush Pump

THE NATIONAL SUPPLY COMPANY

The National Supply Company, Toledo, Ohio, announces the Ideal Type C-100 Power-Driven Slush Pump, designed primarily for shallow rotary drilling where 3½-inch drill pipe is used, but equally well adapted to water supply, oil line and other high-pressure work.

The standard water cylinder liner bore is 6¼ inches and stroke is 10 inches. A 5¾-inch liner is also available. Maximum working pressure of fluid cylinder is 1500 pounds per square inch and maximum rated hydraulic horse power is 100 at 65 RPM. The weight of the pump complete with extended skids but less V-belts and sheaves is 11,100 pounds. Fluid valves and seats are regularly Ideal Type F-2 while fluid pistons and rods are Ideal Type FA made to API No. 4 standards. Fluid cylinder liners are Nationalloy, a special National product which the Company says, has shown not only unusual liner service, but also has contributed to a notable increase in piston life. A complete description of this new slush pump and its features is given in National Supply Company's Bulletin No. 234.



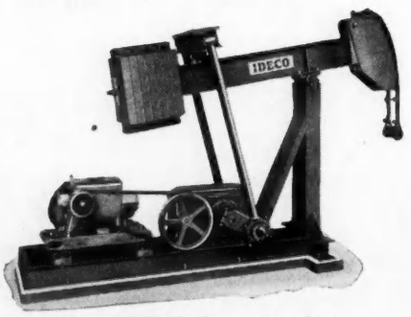
Ideal Type C-100—6¼ x 10-inch Power-Driven Slush Pump

Pumping Unit

INTERNATIONAL DERRICK & EQUIPMENT COMPANY

International Derrick & Equipment Company, Columbus, Ohio, has added another unit pumper to its Ideco line.

This new pumper is the infant of the Ideco unit pumper family. It is designed for shallow-well pumping to 2000-foot depths. Standing only 6 feet in height to the top of the walking beam, it is a very compact unit and may be transported with ease.



Ideco DT-61 Pumping Unit

This unit is known as a DT-61. It consists of a D-18 unit reducer and a TO-H6 unit structure. The unit reducer is of the double-reduction type, having an A.P.I. nominal capacity of 3.6 horsepower at 20 s.p.m. or a peak torque capacity of 17,900 inch-pounds. The stroke lengths are 16, 18, 21 and 24 inches. The reducer is equipped with heat-treated single-helical gears. Gear ratio is 25 to 1. All shafts rotate in roller bearings. The reducer is enclosed in a new type Ideco solid-hub housing.

The unit structure embodies the use of twin cranks and adjustable beam weights. The Samson post is of the single-leg type adequately braced and is of all-welded construction. Needle-type roller bearings are used at all beam bearing points. Wrist pins rotate in tapered roller bearings.

Variable Orifice Choke

WISE MACHINE COMPANY

A new type of variable orifice choke or flow bean has been developed by Wise Machinery Company, Butler, Pa.

In the Wise Variable Orifice Choke a series of two thin plate orifices is used; one called the down stream plate is fixed and forms the support for the up stream plate. The up stream plate is adjustable; that is it can be moved over the lower plate as desired allowing for the size of the orifice to be varied from full size to practical shut-off.

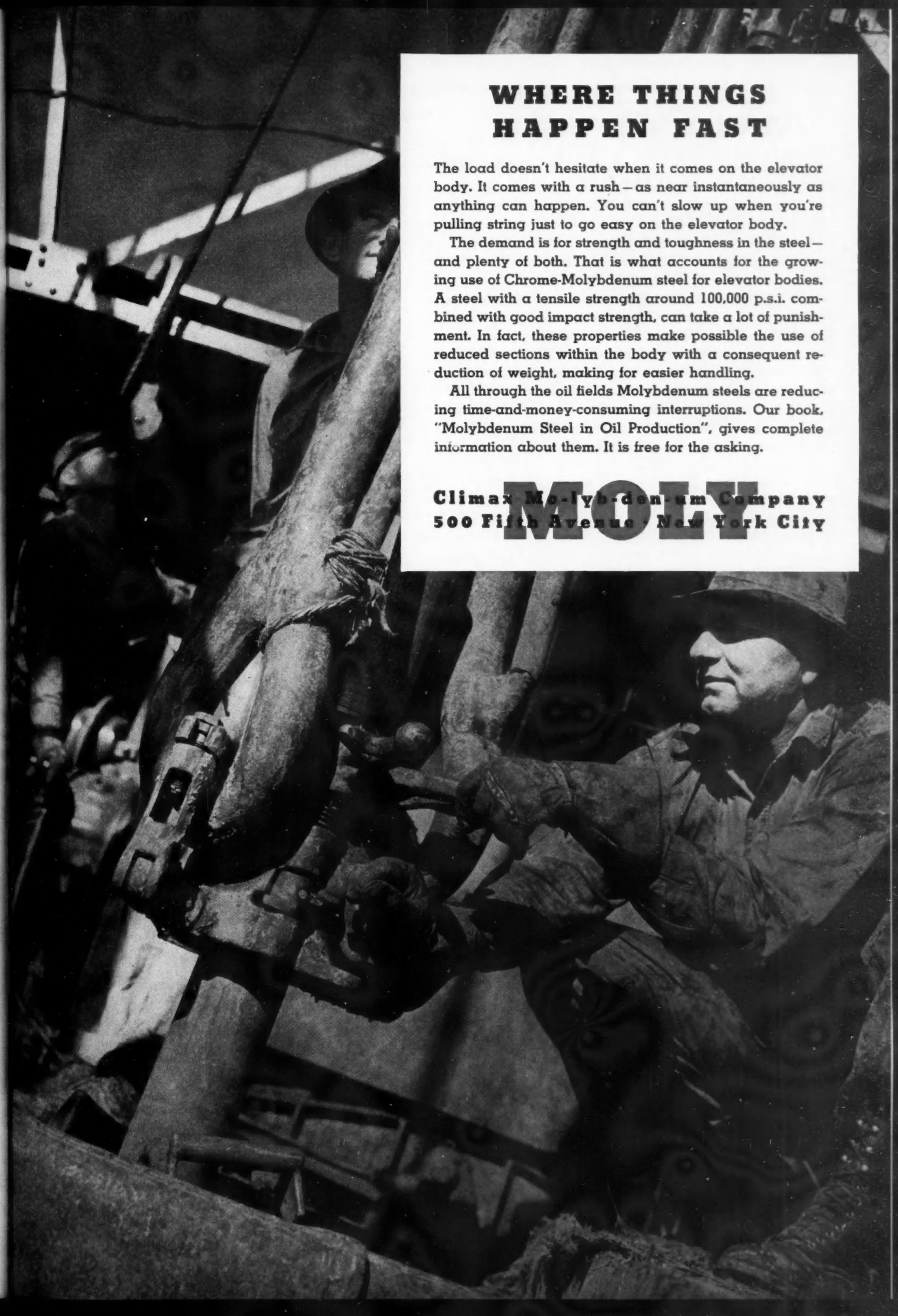
Wise Variable Orifice Choke

The advantages claimed for this new choke are that by use of the thin plate orifice wear has been so reduced as to give this choke many times the service of other types before replacement of inexpensive plates is necessary. All during the life of these thin plates the choke remains 100 percent efficient. These chokes are tested for 6000 pounds pressure and pressure has no effect on the ease of adjustment.

Rotary Hose Couplings

DIXON VALVE & COUPLING COMPANY

A built-in rotary hose coupling of original design has been furnished manufacturers of rotary hose by Dixon Valve & Coupling Company, Philadelphia, Pennsylvania. Makers claims for the new coupling are summarized in: simplicity of contour, superior strength and ruggedness, smooth, uninterrupted flow passage, adaptability to any standard rotary hose, and lightness of weight. The coupling assertedly introduces a new method of anchoring to the hose. In addition to the accepted use of compression and frictional anchorage and seal, this coupling embodies a principle of turning back the actual structural members of the hose over segmental clamps, then binding



WHERE THINGS HAPPEN FAST

The load doesn't hesitate when it comes on the elevator body. It comes with a rush—as near instantaneously as anything can happen. You can't slow up when you're pulling string just to go easy on the elevator body.

The demand is for strength and toughness in the steel—and plenty of both. That is what accounts for the growing use of Chrome-Molybdenum steel for elevator bodies. A steel with a tensile strength around 100,000 p.s.i. combined with good impact strength, can take a lot of punishment. In fact, these properties make possible the use of reduced sections within the body with a consequent reduction of weight, making for easier handling.

All through the oil fields Molybdenum steels are reducing time-and-money-consuming interruptions. Our book, "Molybdenum Steel in Oil Production", gives complete information about them. It is free for the asking.

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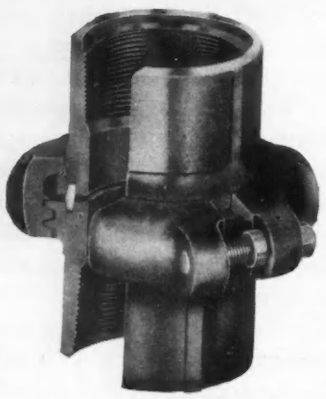
MOLY

Red-Rex
ONE-BOLT
PIPE UNIONS



The new Red-Rex Malleable Union, designed for 500 lbs. working pressure and tested to 1,000 lbs., is the sensation of the quick union field. It is made in both "short hub" and "long hub" types, and is identical in construction throughout to the high pressure steel union. Interchangeable seal rings.

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Long Distance 267, Box 132, Houston, Texas

NOTES FOR THE Equipment Buyer and User

them down to form a homogenous section of coupling and hose. The metal members are bound down with a metal helix which is also extended into the body of the hose to give additional reinforcement to the end portion.

R. A. Neal Promoted By Westinghouse

Appointment of Robert A. Neal, formerly assistant to vice president, as manager of the switchgear division of Westinghouse Electric & Manufacturing Company is announced by A. C. Streamer, general manager of the company's East Pittsburgh division.

Born in Kittery, Maine, Neal has been associated with Westinghouse since 1910, when he was graduated as an electrical engineer from the University of New Hampshire. From the day he completed the graduate student course at East Pittsburgh, he has been identified with the company's development and production of switching apparatus.

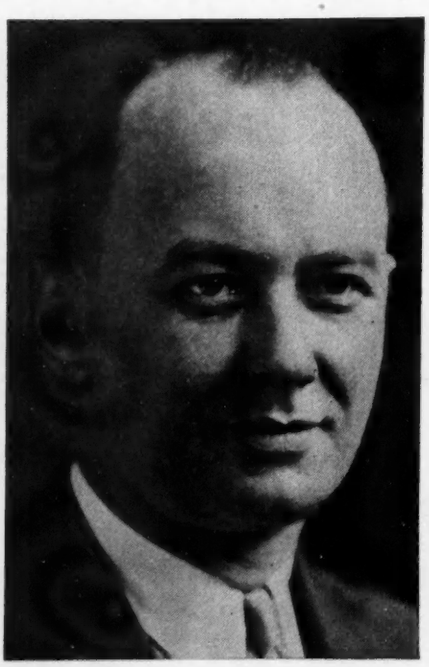
He was first assigned to the Switchboard Sales Group in 1911 and within four years had been promoted to assistant manager of the group. Five years later he became manager of the entire switch department, and was again promoted in 1926 to sales manager for all switchgear apparatus. He held this position until 1931, when he became manager of the central station sales department, later to be appointed assistant to vice president.

R. A. NEAL
Manager Switchgear Division, Westinghouse Electric & Manufacturing Company

W. H. Kreer Takes Over Templeton, Kenly Dallas Office

W. H. Kreer, formerly middle-west sales engineer for Templeton, Kenly & Company, Chicago, has been placed in charge of the company's Dallas, Texas, office to replace Charles Neher who died recently.

Kreer has an intimate knowledge of the Simplex Jack Line, having been with the company for many years prior to his recent re-employment, and is well acquainted with the petroleum industry through his contact with Illinois basin, Michigan and Ohio producers.



W. H. KREER

Scotty Henderson Elected McEvoy Vice President

A. (Scotty) Henderson, for several years plant superintendent for J. H. McEvoy & Company of Houston, recently reorganized as the McEvoy Company, last week was elected vice president in charge of production and a director in the new organization.

Henderson came to America from Scotland in 1912 and went to work in Houston as a machinist's apprentice in 1913 at shops of the T. & N. O. Railroad. In 1916 he went to Port Arthur, Texas, as a die maker for The Texas Company. Returning to Houston in 1921 after the war, Henderson was

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NOTES FOR THE Equipment Buyer and User

A. HENDERSON

employed as machinist for Lucey Manufacturing Corporation, of which he eventually became plant superintendent. He was superintendent of Hartwell Iron Works from 1928 to 1931, when he resigned to go with the McEvoy organization.

Jones & Laughlin Corporation Perfects Bessemer Process Control

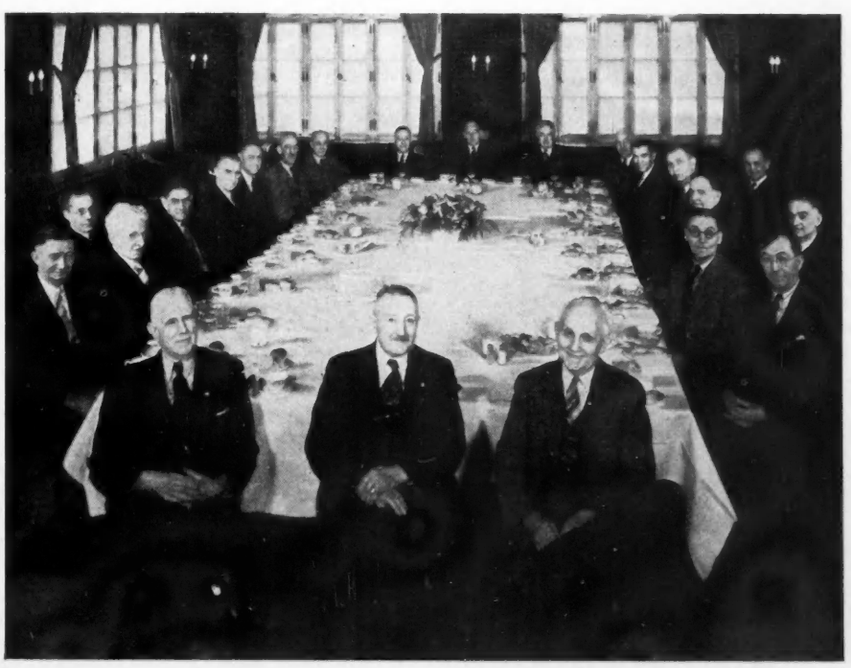
The first steel producer to apply scientific control to the manufacture of Bessemer steel, Jones & Laughlin Steel Corporation, Pittsburgh, has made application for patent rights covering a method using photo-electric cell equipment in the operation of its Bessemer converters.

This scientific control is the first basic improvement in the history of Bessemer practice, and is one of several methods on which patent applications have been made by the company. It is the result of several years intensive work on the part of the company's metallurgical department.

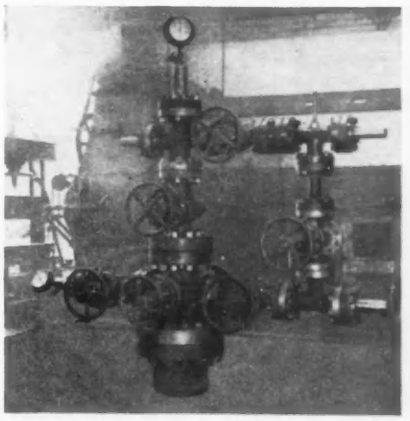
The new method, known as the "Bessemer Flame Control" has proven highly successful in achieving uniformity of quality in Bessemer steel, an objective long sought by the steel industry. Exhaustive tests of the new invention were conducted in the Jones & Laughlin Steel Works over a period of many months.

This precision control has an arrangement of photo-electric cells as the actuating element. In conjunction with the cells and as a part of the control system, a complete instrument panel provides accurate regulation of blowing conditions.

Until now, control of the Bessemer converter depended upon the skilled eyes of the blower, who had sole responsibility in determining the proper "end point" or termination of the blow,



A luncheon was given on May 11 at the Penn Lincoln Hotel, Wilkinsburg, Pennsylvania, in honor of Oscar Meyer, who rounded out 50 years of continuous service with Pittsburgh Equitable Meter Company. The guest list included fellow employees and officials of the company whose total service amounted to 665 years, an average of 30 years for the group. Three of the group—Oscar Meyer, H. C. Chrisman and Joseph Kline (shown in the foreground of the picture)—have a total service record of 150 years.



Brewster By-Pass Well Assembly
Tested 10,000 pounds. All steel, all flanged and pre-tested, this newest of Brewster assemblies embodies a by-pass control head of exclusive Brewster design. The two valves on the by-pass head completely control all casing pressure. Two gate valves are done away with. The whole assembly is more compact and has fewer connections. Write for prices.

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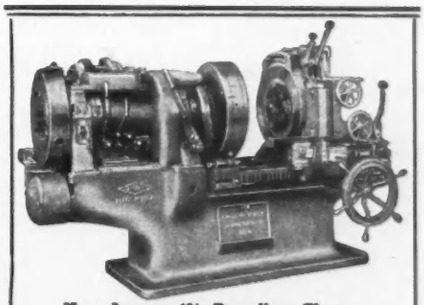

New Landis 4¼ Receding Chaser Pipe Threading Machine

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NO-SMOKE
STANDCO BRAKE LINING
Stands the gaff and gets the job done without scoring brake rims. See page 2100 Composite Catalog.
Standco Brake Lining Co.
HOUSTON

TENDERS WANTED

Crude Oil

A. N. C. A. P.

The Administracion Nacional de Combustibles, Alcohol y Portland, of Montevideo, Uruguay, invite public tenders for the supply of crude oil for a term of three years or alternatively for a term of five years, both periods as from the 1st of September, 1941.

Copies of Specifications and Conditions of Tender may be obtained on application to the Uruguayan Consulate, London or New York, or the London Agents, Messrs. Duncan, Fox, & Co., Ltd., 144 Leadenhall Street E. C. 3, or the New York Agents, Messrs. Hughes & Co., 67 Wall Street.

Tenders in plain sealed envelopes must be delivered in the Uruguayan Consulate, London or New York, not later than 10:30 a. m. on the 10th day of July, 1939.

Postage prepaid and self-addressed, these cards are inserted in the index of your copy of The Composite Catalog.

FOR YOUR *Convenience*

Because over 400 leading manufacturers have filed their complete or condensed catalogs in The Composite Catalog you will usually be able to find—immediately—what you need, but for those cases where you fail to find all the information you need on a piece of equipment, these self-addressed, postage prepaid blue cards are provided. Fill out a card, drop it in the mail, and the information requested will be sent promptly.

THE COMPOSITE CATALOG

which has a definite connection with quality results. The object of the research was to supplement the skill of the human eye with an invariable method that would not be affected by fatigue, inattention, poor physical condition or other variables which affect the most skilled eyes at times.

Long and patient research work in the laboratories and in the steel works resulted in the development of a method which operates with split-second speed and without the variables of the human eye. For the first time in the industry, scientific quality controls are established in making steels by the Bessemer process.

It is believed that this method of aiding J & L blowers in their flame control decisions by precision equipment will develop new applications for Bessemer steels where uniform high quality steel is required. The "Bessemer Flame Control," in the early stages of its application, promises strong support to the economic and commercial value of the Bessemer process, and may influence the ultimate direction of steel making procedure, a company announcement says.

F. E. Bruhn Joins El Paso Diesel Agency

The Equipment Supply Company, El Paso, Texas, distributors in West Texas, New Mexico, and Mexico for General Motors Diesel engines, announces appointment of F. Erich Bruhn to handle sales of these engines in the oil, mining and industrial applications. Bruhn formerly was with The National Supply Company at Midland, Texas.

New Baldwin Roller Chain Catalog

The Baldwin-Duckworth Chain Corporation, Springfield, Massachusetts, has just issued Catalog M. This new book is over a third larger than the previous catalog, printed in attractive colors and profusely illustrated with application photographs. It lists and describes the company's complete line of single and multiple strand roller chains, sprockets and specialties. A new feature is the inclusion of prices.

Over 30 pages are devoted to chain and installation data for all types of applications. Speeds, sprocket ratios, chain tension, adjustment idlers, correct lubrication, horse power diagrams and tables for transmitting up to 600 horsepower, plus several pages of important formulae are typical of the data included.

Leak Preventer

"Rectorseal, The Positive Leak Preventer" is the title of a 16-page booklet recently published by Rector Well Equipment Company, Fort Worth, Texas. This is a handy manual which tells the story of Rectorseal and describes its many profitable applications in connection with running casing and tubing, drilling rig connections, separator and flow line connections, setting bolted steel tanks, gas distribution systems, butane plants and installations, natural gasoline plants and refineries, pipe line systems and bulk plants and retail gasoline distribution. It also includes the results of a number of comparative tests, directions for application, and retail prices.

Squeaks from the Bull Wheel

Playing Safe

"You lazy loafer. S'pose I tooken sick an' you couldn't do washings, how would you live?"

"Ah never thought ob dat, honey. Ah'll sho hustle around tomorrow an' git some healf insurance on you."

Looking Ahead

"I hope you appreciate that in marrying my daughter you are getting a very big-hearted and generous girl."

"I do, sir. And I hope that she has acquired those fine qualities from her father."

When a Dummy Isn't

"I just love to be the dummy in the bridge game."

"Yes, one feels so free to talk then."

Dubious Directions

Pardon me, but does this train stop at Jitney Junction?

Yes, it does. I get off at Brownsville, the stop after Jitney. You watch me, and get off one station before I do.

Confessed Fugitive

"I trust we shall be able to make you feel quite at home."

"Please don't try it, I don't want to feel at home. That's why I came here."

Can't Kid Him

"Officer, I'm looking for a parkin' plashe."

"But you've got no car."

"Oh, yesh I have; it's in the parkin' plase I'm lookin' for."

Nocturne

Playwright—Say, that suit you have on looks as if it'd been slept in.

Critic—It has. I wore it to the premiere of your new play last night.

Alibi

"Ye're late this morning, Rastus!"

"Well, sah, Boss, when I looked in de mirror, ah couldn't see mah self there, so ah thought ah'd done gone t' work. After awhile ah discovered dat de glass had dropped out ob de frame!"

Not Unusual

"Was her martial trouble incompatability?"

"No, just the first two syllables."

Proving It

"So your husband objects to cats."

"Yes. He says that I feed all the cats in the neighborhood. Won't you stay and have some tea?"

Checking It

"Will you love me when I'm old?"

"Love you? I shall idolize you, I shall worship the ground under your precious little feet. I shall — um — er — You are not going to look like your mother, are you?"

Safety First

Doctor: "Have you told Mr. Brown that he's the father of twins?"

Nurse: "Not yet. He's shaving."

Complication

"Don't stand there like a fool, man. Run and get the village doctor."

"Sorry, Mister, that's him you just run over."

Just Fair

Old Salt (to fair visitor, who had been out several times with him in his boat): "Bit of a swell today, miss."

Visitor: "Awfully nice of you to say so—but you ought to see me on Sundays!"

Dangerous Diet

"Sarah, you'll have to stop feedin' that cow on shredded wheat. It's dangerous."

"Why is it dangerous, Eph?"

"Well, this mornin' at milkin' she durn near chewed my whiskers off."

Futile

"Would you scream if I should kiss you?"

"Of course. But I don't suppose it would do any good because there is nobody home."

Weather Forecast

"I'll let you off with a fine this time, but another day I'll send you to jail."

"That's what I expected."

"What do you mean?"

"Fine today—cooler tomorrow."

Confusing

"Is your new boy friend progressive?"

"It's hard to say. He wears last year's clothes, drives this year's car, and lives on next year's salary."

Cat's Fur

"That sure is a lovely mink coat Jim's wife is wearing."

"Yeah—but have you noticed that every time she passes a dog the fur on the collar stands straight up?"

Obeying Mother

"I have brought this book back. Mother told me it wasn't fit for a young girl like me to read."

"I think you mother must be mistaken."

"Oh, no, she isn't. I've read it all through."

Valuable

"The harmonica you gave me was the best present I ever got."

"I'm glad to hear that."

"Yes, mother gives me a quarter a week not to play it."

Fatted Calf

The prodigal son had returned. "Father," he inquired, "are you going to kill the fatted calf?"

"No, I'll let you live. But, I'll put you to work and train a lot of that fat off."

Not Quite

"You remind me of the sea."

"Why? Because I'm so wild and uncontrollable?"

"No! Because you're all wet and make me sick."

Reason Enough

"But daddy, why do you object to my becoming engaged? Is it because of my youth?"

"Yes, he's hopeless."

Essential

"You're a danger to pedestrians. You're not allowed to drive for two years."

"But, sir, my living depends on it."

"So does theirs."

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Made in 1½, 3, 5, and 10 gallon sizes.
GOTT Water Cans are the practical way to keep drinking water cool for long periods, protected from impurities and always handy to the job. Snug fitting large removable top, strongly built to withstand rough usage. GOTT Water Coolers have extra large covers and a handy non-leaking push button faucet. Your Supply Store has them, get one today! . . . . . .
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